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The

ILLINOIS

Medical Journal

VOL. 82 NO. 3

September, 1942

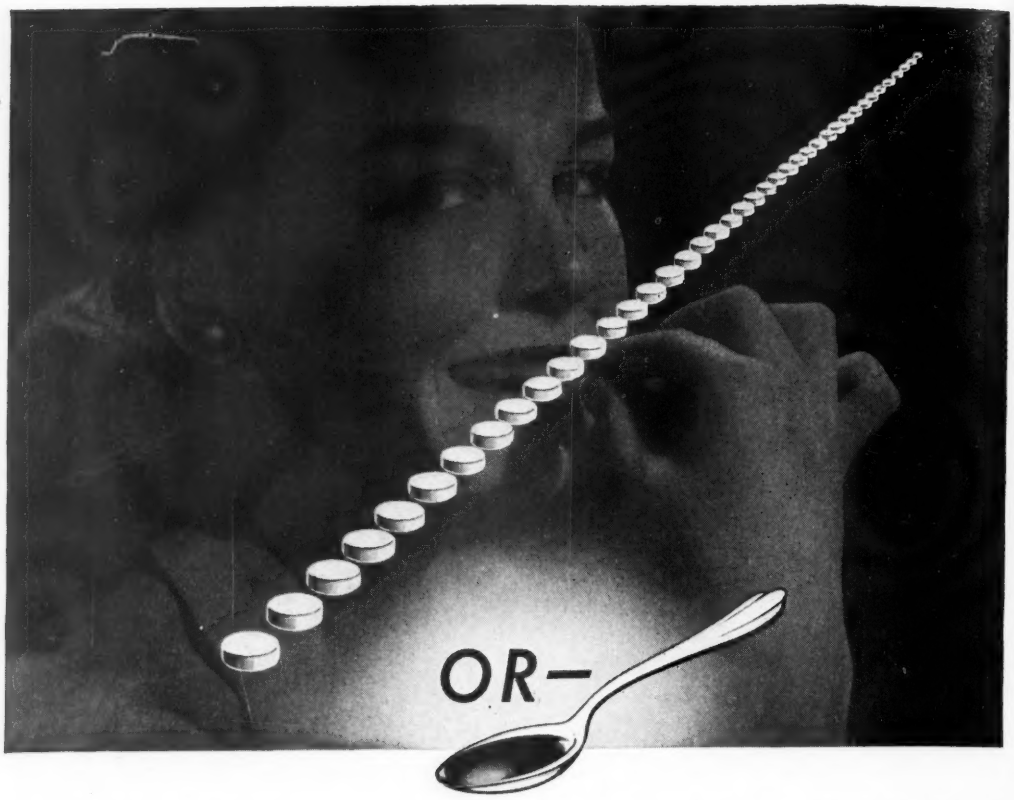
In This Issue

Macrocytic Anemia

The Use of Anterior Pituitary Extract in the Treatment of Allergy

(See page 25 for Table of Contents)

OFFICIAL JOURNAL OF THE ILLINOIS STATE MEDICAL SOCIETY



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The Illinois Medical Journal

September, 1942

VOL. 82, NO. 3

Official Journal of the Illinois State Medical Society

EDITOR — Harold M. Camp. EDITORIAL BOARD — James H. Hutton, Chairman, Frederick H. Falls, Josiah J. Moore, Edwin M. Miller, Chauncey C. Maher, Harry S. Gradle, Philip H. Kreuscher, Harry Culver.

Editorials

WANTED — A STANDARDIZED TREATMENT FOR BURNS

There is probably no condition which the medical practitioner is called upon to treat in his regular work that causes more anxiety than the treatment of burns. Physicians have been expected to tell at a glance the degree of the burn, then as suddenly, give an opinion as to the prognosis, duration of the disability and the permanent damage, if any, that may be expected.

Under normal conditions, burns are high on the long list of the commoner casualties and in times of war they probably occupy first place among casualties. With modern bombing, use of tanks, flame throwers, sinking of tankers, airplane disasters, and many other similar results of modern warfare, it is not surprising that burns must be given much consideration by the medical corps. Then at home, in connection with civilian defense, we are told that the management of burn cases occupy no little part of the time of the civilian physicians who care for casualties. It was stated that following the Pearl Harbor assault last December, nearly half of those admitted to hospitals were on account of burns, while many others with minor burns were treated at casualty stations, in the physicians office, or in their own homes.

During recent decades hundreds of new agents have been brought before the medical profession as the long sought panacea which would eliminate all of the objectionable features of the many preparations previously used, yet at this time, there is no universal agreement that any one of these preparations are superior to all of the others. The work of Davison and his experiences with the use of tannic acid in the treatment of burns reported in 1925 has resulted in a lessened mortality from burns, as well as a reduction in the permanent disabilities which are so commonly seen especially in the extremities.

Much information has been added in recent years to the store of knowledge concerning the pathologic and physiologic changes in the human body following the receiving of burns and it is true that with this data and the application of good judgment there has been an improvement in statistical reports following burns.

Burns rapidly produce shock and the nature of this reaction is now rather generally agreed upon, although it is not possible to state that an extensive burn with but little shock in one individual will be the same picture presented in another similar type burn case. The treatment of shock resulting from burns should be the first consideration of the attending physician. The rapid reduction of plasma volume is unquestionably a major factor in the production of

this shock. In cases of shock resulting from burns the immediate replacement of the lost fluid content, especially through the use of blood substitutes and particularly blood plasma or serum, should be the procedure of choice. With the rapid loss of plasma, there is frequently a relative increase in blood cells, and the immediate replacement of the fluid loss by whole blood is usually not advisable. It is true, however, that when anemia develops later, blood transfusions are definitely indicated. The relief of pain early in the treatment of shock from burns is likewise an important therapeutic necessity. Opiates perhaps in most cases, should be the agent of choice.

The most important secondary problem in the treatment of most cases of burns is undoubtedly that of infection, for in extensive burns there is invariably a large field which becomes an ideal medium for infective organisms to develop. The local treatment of burns requires the most careful aseptic technic, and this is perhaps second only in importance to the primary treatment of shock. Debridement of burned tissue under anesthesia, and with the most careful aseptic technic, is generally considered today as the ideal treatment. In recent years many local substances have been used successfully in burns. Some years ago the paraffine spray was quite popular, then with the work of Davison, the use of tannic acid as a spray, local application, or as a whole bath seemed to be generally accepted as the proper procedure. Cod Liver Oil ointments and other vitamin A products have been used by many who believe them to be ideal for the purpose. Silver nitrate and tannic acid, gentian violet, the triple dye preparations, and other similar local agents have been used with much success.

During the past three or four years with the ever increasing indications for the sulfonamides, their use has been extended to the treatment of burns both locally and orally, the latter principally in cases of secondary infection. There

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State Society will pay no bills for legal services except those contracted by the Committee. Notify the Chairman at once. Do not employ attorneys.

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has been a variance of opinion in the manner and intervals of dressing the burn wound. Some have used paraffine mesh gauze, others plain sterile gauze, or paper dressings, these changed according to the preference of the individual physician daily, or perhaps left in situ for a period as long as two weeks. Depending on the anatomical area involved in burns, the use of splints may prove of definite advantage in the prevention of subsequent contractures and ultimate plastic repair, this applying especially to burns of the extremities.

Considering the importance of burns in war, as well as civilian practice, it is hoped that in the near future there will be a more generally accepted plan, standardized, simplified and generally agreed upon, for the treatment of this important causualty.

HEALTH IN INDUSTRY

At this time, with many hundreds of thousands working in the many essential plants throughout the country, all primarily interested in doing their part in defeating the Axis countries, it is highly important that more attention be given by the medical profession to these workers and to their working and living environment.

The U. S. Public Health Service is rendering all possible assistance in the development of plans which will improve the health of workers, and have developed some interesting literature on this subject. One of these recent releases, "Outline of an Industrial Hygiene Program" gives much information on the subject, and copies may be procured from the Division of Industrial Hygiene, National Institute of Health, U. S. Public Health Service, Bethesda, Maryland.

According to this outline, in planning for improved health, three general considerations must be kept in mind:

1. Conditions in the working environment (the plant).
2. Conditions in the living environment (the house and community).
3. Personal conditions (the health status of the individual and his ability to participate in the program).

"To make your industrial hygiene program effective, you need four types of service."

1. Medical
2. Engineering
3. Safety
4. Welfare

The brochure referred to above is devoted to a description of these services. With the ever increasing demands for production in these thousands of plants throughout the country, more attention must be given to these highly important considerations. It is quite obvious that the medical considerations are one of the most important of all, for the health of the worker must be constantly watched closely, not only his personal health, but also the highly important factors pertaining to his working and living environments.

Industrial physicians with training and experience sufficient for them to actually qualify as experts in this important field cannot be developed over night, and it is essential that more attention be given to this important field.

With this in mind, the Procurement and Assignment Service has been directed to develop lists in their respective states of physicians who have been declared ineligible for military service who are qualified for special types of work, and industrial medicine is one classification which should receive much attention. It was reported that some 12,000 physicians stated on their questionnaires that special attention had been given in their practice to industrial medicine, and this was given as first or second choice on the questionnaire. Special attention will be given to this request in the files developed through Procurement and Assignment, and as requests are made by industrial organizations for adequately trained personnel, the proper names will be supplied in the endeavor to get the available positions filled.

The Committees on Industrial Health of the respective state medical societies will assist in this work, and perhaps eventually take a leading part in re-location of physicians desired for this work.

Within recent weeks, some industrial organizations have requested of Procurement and Assignment that certain young physicians who have only recently joined industrial medical departments be deferred, but only in exceptional cases

is it deemed advisable to establish essentiality for physicians in this work who have not had at least two years service with the organization and who are devoting full time, or if on part time basis, not less than 40 hours each week in that service.

Plans have been developed recently to set up training centers for industrial health, so that physicians above draft age and those who have been rejected for military service may have additional training to permit their being able to qualify for industrial positions. It is possible that many women physicians, who up to now have not been permitted to apply for commissions in the medical corps, may be used to good advantage in this field.

INCREASING INTEREST IN MEDICAL HISTORY

Medical History has been the hobby of many physicians throughout the country for many years, and many physicians now living have seen the greatest developments in all branches of medicine that have yet been recorded. Illinois physicians have added much to medical knowledge during the past half century, and each year sees an increase in the research work within this state.

During the past two decades, the Illinois State Medical Society has had an official committee, whose principal duty has been the accumulating of historical data. Some years ago, under the supervision of the late Charles J. Whalen, and with the late Lucius H. Zeuch, the History of Medical Practice in Illinois was prepared and published by the State Medical Society. Dr. Zeuch devoted the larger part of more than two years touring the state, and procured first hand information on the medical pioneers of Illinois. Many photographs were taken by Dr. Zeuch, and many bits of historical data of interest to all historians were obtained.

It was the intention of the Society to publish this medical history in one volume, and subscriptions were solicited on that basis. Before the book was published, it was found that so much valuable data was procured that it could not possibly be published in one volume, and the Society decided to publish a second volume, without additional cost to the early subscribers. Soon after the publication of the first volume, with existing economic problems, it was deemed advisable by the Society to postpone work on a second volume. Later with a second World War apparently inevitable, the work was postponed for the duration.

The Illinois State Medical Society has a permanent Committee on Archives, which is continually endeavoring to procure all possible data concerning the work of physicians of Illinois. Many photographs of medical pioneers have been accumulated, and they will be retained permanently among the archives of the Society. Following the development of the Fifty Year Club, an effort was made to procure a biographical sketch of each of these members, approximately 350 to the present time. Photographs of this entire group have been desired by the committee, and to date many have been submitted, although there are still many who have not submitted a photograph for the archives.

It seems desirable now that the Committee on Archives should request photographs of all Illinois physicians in military service, and all county societies are requested to aid the committee in procuring them, along with data concerning the individual medical officers. The permanent committee on archives is composed of Drs. D. D. Monroe, Alton; Carl E. Black, Jacksonville, and P. J. McDermott, Kewanee.

Owing to the fact that the Society still has quite a few copies of the History of Medical Practice in Illinois, the Council recently advised the Secretary to offer them at the reduced price of $5.00. Physicians or others desiring a copy of this highly interesting volume, may procure a copy postpaid by sending a check or money order to the Secretary, Dr. Harold M. Camp, Monmouth, Illinois.

EDUCATIONAL COMMITTEE EXTENDS SERVICE TO INDUSTRIAL PLANTS

The Educational Committee recently offered to furnish industrial plans of the state with copies of its DO YOU KNOW bulletins for posting on employee bulletin boards. As a result of this offer more than two-hundred-and-fifty copies have been requested for posting every other week.

The replies received from the medical directors of these plants indicate the interest in the type of information released in this material:

"In reply to your communication of July 31st relative to 'Do You Know' bulletins, wish to state that I shall be pleased to receive these bulletins each week as stated therein. We shall appreciate any number of them that you see fit to send us."

"We have a bulletin board in our 18th Street Fred Harvey Commissary and I am sure that your 'Do You Know' bulletin will be helpful to our employees. By all means place my name on your mailing list and I will see to it that your bulletins will be placed on our bulletin boards not only in the Commissary but also our restaurants and dining cars. Send one dozen copies to start."

"Am in receipt of copies of your 'Do You Know' bulletin. Think they are fine. Would be glad to have my name on mailing list and please send me about six copies each time. I am Surgeon for Lehigh and Marquette cement plants here."

"In reply to your letter of July 31, I shall appreciate receiving six copies of the 'Do You Know' bulletin issued every other week."

"I would be pleased to receive five copies of these bulletins as they are published. I thank you for calling these bulletins to my attention and I am sure they will be of benefit to our Industrial Employees."

"Would you please place my name on your mailing list. I would be grateful if you would please send me two copies of every bulletin sent out, so that WE CAN HAVE THEM MIMEOGRAPHED AND GIVEN TO ALL THE EMPLOYEES."

"In view of the fact that I have enjoyed reading those that have already been published, may I ask that my name be added to your mailing list for all future releases. Thank you for your anticipated cooperation."

"I would be delighted and thankful if you would put my name on your mailing list and send me every other week one of these extremely educational bulletins."

"The 'Do You Know' bulletins are O. K. I would like to have copies for each of the following Industrial Plants as well as one for my office. (This doctor sent the names of six large industrial plants.)

"I find that I can use THIRTY 'Do You Know' bulletins, same to be placed on the bulletin boards in our various departments."

"Your letter referring to your 'Do You Know' bulletins is indeed interesting and I would be pleased to have two copies of each bulletin at my disposal. I assure you they will be made use of in the proper manner and I anticipate considerable benefit from them."

POINTS OUT THAT THOSE WITH DIABETES ALSO ARE DONG THEIR DUTY IN WAR

The patriot who cannot serve in the armed forces because of diabetes can and will perform his duty in the defense industries and thus will help to insure victory in the present war for our country, Anthony Sindoni Jr., M.D., Philadelphia declares in *Hygeai, The Health Magazine* for July.

"In the present war crisis," he explains, "every idle hand is a drawback to our country, and for this reason all people, even those who have diabetes, should be coordinated into the productive work scheme of the nation. Therefore, the coordinated effort of all who are able to work is a demand of our national emergency. The present crisis makes this demand, regardless of diabetes.

"Medical progress has made it possible to control those with diabetes to the extent that they can be regarded to a marked degree as healthy. However, one must bear in mind that the diabetic are classified into two main groups: (1) the noninsulin group, whose condition does not require insulin; (2) the insulin group, whose condition requires it. In those persons not requiring insulin there is no possibility of insulin reactions or shock, since the patient can control his diabetes with diet and general hygenic care. These patients, therefore, with proper instruction and care can perform the duties of a normal person with little or no difficulty.

"Hundreds of thousands of persons with diabetes require insulin for control of their diabetes. This group includes many of military age. But these also, under proper control, can be made to do the work of the normal person to a large extent. There are many normal persons who are of the opinion that a person with diabetes on insulin is likely to be unreliable because of his fear of insulin shock or of reactions. Actually, the likehood that a reaction may occur depends on the patient and doctor, because an intelligent person who follows his physician's instructions carefully and adheres to his diet knows the signs of unexpected insulin effects and understands their prevention. . . . He can certainly be engaged in the manufacture of war material to the same extent that he can be used in civil production. A recent survey of various plants, factories and mills which devote their time exclusively to defense work revealed that many of the diabetic are employed in doing work which requires exceptional skill."

Correspondence

TIRE RATIONING REGULATIONS FOR PHYSICIANS

Chicago Metropolitan Defense Area Office of Price Administration
228 N. La Salle Street, Chicago
August 14, 1942

Fred H. Muller, M.D., Secretary
Chicago Medical Society
Dear Doctor Muller:

This will acknowledge your letter of recent date, in which you request a copy of Amendment No. 7, in order to clarify the position of physicians and surgeons within the Tire Rationing Regulations.

In accordance with your request, we are enclosing copies of Amendments No. 7 and No. 17, which pertain to the eligibility of physicians and surgeons. Section 405 of List A, states, in part, as follows:

"Whereas the provisions under the previous regulations required only that the eligibles referred to needed and used motor vehicles * * * to make professional calls when their professional practice required such calls, the present requirement is that the vehicle on which the tire or tube is to be mounted is necessary for the performance of the applicant's professional duties, because of the absence of other practicable means of transportation. However, in the case of a professional such as physician or surgeon, if his professional practice requires his answering emergency calls, he may be issued a certificate to enable him to use his vehicle for transportation between his home, his office, or a hospital, even though other practicable means of transportation are available. Even in the absence of other practicable means of transportation, or in the event that the applicant's professional practice requires his answering emergency calls, the applicant must show that the vehicle is used *exclusively* for his professional duties."

Under the Revised Tire Rationing Regulations, all who qualify for tires must accept recapped or retreaded tires where recapping or retreading is possible. However, we wish to stress the importance of all applicants preserving the tires they now possess, and if at all possible, having them recapped when such service is indicated and by not using them until they are beyond repair. They may conserve their present tires in the following manner — driving carefully, keeping the tires properly inflated, and the car in proper alignment. All of these factors tend to conserve the rubber, which is the ultimate goal of the Rationing Program.

In the purchase of a new automobile, physicians and surgeons must definitely establish their need of a car. A 1939 or earlier model, or a car which has been driven more than 40,000 miles, is only one of the requisites upon which eligibility classification is based.

We submit the above information merely as a guide to you in informing your members of their status under the Revised Tire Rationing Regulations. We trust that we have been of some help in this vital problem.

Very truly yours,

Michael F. Mulcahy
Director, O. P. A.
Chicago Metropolitan Area

"ANOTHER OLD-TIMER"

To the Editor:

I recently read with much interest the letter published in your journal from a physician who offered his services to his country early in World War I, and who was criticizing many of the younger men in practice today who prefer to remain at home and carry on "for the duration."

The writer succeeded in getting into the Army and saw considerable service over seas in 1917, and regrets the fact that the Government will not listen to his request for service of some type in the present war which will far overshadow any previous war in the history of the world. Frequently I tell my younger friends who have built fine homes and feel that they must remain on the job to make the payments, or who have so much life insurance that their compensation as a medical officer would not take care of the annual premiums, that their homes, insurance and other earthly possessions will be worth nothing if we fail to win this war, and that it behooves all of us to dig in and do everything possible to whip the Hitler-Mussolini-"Hiro" combination.

With our army now larger than the maximum force during the first world war, it is essential that more medical men get into the service for the health of our fighting men is of utmost importance. Then we older fellows can do something even though not permitted to wear a uniform. There are undoubtedly many places where younger physicians can be replaced by older men and carry on until the war is over. Even though many of us older men have not done obstetrical work, cared for babies, and many of the things seen in a general practice, we can dust off our volumes on obstetrics, pediatrics and other similar subjects; we can attend more medical meetings, take more short refresher courses, and be able to carry on in this emergency.

From present indications, whether they like it or not, most of the physically fit younger physicians are going to be in service within a few months. The sooner they become reconciled to this fact and endeavor to make their plans accordingly, the better off they and their country will be.

Perhaps we older men can serve our country to some extent by telling the younger men what we did in the last war, that we too had problems, families to leave behind, practices which had been built up by hard work, and even our homes were in jeopardy, yet we got in, and have been eternally grateful that we heeded that call.

Sincerely,

"Another Old-Timer."

TUBERCULOSIS CONFERENCE ANNOUNCED

The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Trudeau Society will hold a meeting at the Edgewater Beach Hotel in Chicago on September 16, 17 and 18.

The Conference Program for Wednesday September 16 and Friday September 18 is largely for nurses, social workers and the Seal Sale Organization.

On Thursday, September 17, the Conference meets in joint session with the Mississippi Valley Trudeau Society. The medical program follows:

THURSDAY MORNING PROGRAM—9:30 A. M. to 12:00 Noon

JOINT SESSION WITH TRUDEAU SOCIETY

C. W. Kammeier, Executive Secretary, Iowa Tuberculosis Association, Des Moines, Iowa, Chairman

INDUSTRIAL WORK — Tuberculosis Case-finding in Industry by a Tuberculosis Association — Julius Novak, M. D., Tuberculosis, Institute of Chicago and Cook County, Chicago, Ill.

Surveying Industrial Personnel — Oscar A. Sander, M. D., Milwaukee, Wis.

Problems Encountered in Organizing Case-finding in Industry and Some Possible Solutions — Wm. A. Doppler, Ph. D., Field Director, Adult Health Education, National Tuberculosis Association, New York, N. Y.

THE TUBERCULIN TEST AND TUBERCULOSIS CONTROL — Oscar Lotz, M. D., Executive Secretary, Wisconsin Anti-Tuberculosis Association, Milwaukee, Wis. — L. L. Collins, M. D., Medical Director, LaSalle County Tuberculosis Sanatorium, Ottawa, Ill.

AFTERNOON PROGRAM — 2:00 P. M.

JOINT SESSION

Presiding — Robt. H. Hayes, M. D., Chicago, Ill.

COUNTY ACCREDITATION FOR TUBERCULOSIS CONTROL — J. Arthur Myers, M. D., Minneapolis, Minn.

TUBERCULOSIS CONTROL AND NATIONAL DEFENSE — Herman E. Hilleboe, P. A., Surgeon-in-Charge Tuberculosis Control, State Relation Division, U. S. Public Health Service, Washington, D. C.

INCIDENCE OF TUBERCULOSIS AMONG CIVIL DEFENSE PERSONNEL — Herbert L. Mantz, M. D., Director of Clinics, Tuberculosis Clearing Center, Kansas City Department of Health, Kansas City, Mo.

REINFECTION TUBERCULOSIS IN YOUNGER CHILDREN — James Stygall, M. D., Indianapolis, Ind.

FRIDAY, SEPTEMBER 18, 1942
MISSISSIPPI VALLEY TRUDEAU SOCIETY

MORNING PROGRAM — 9:00 A. M.

Presiding — Myron D. Miller, M. D., Superintendent Franklin County Sanatorium, Columbus, Ohio.

TYPES OF LUNG PATHOLOGY ENCOUNTERED IN AN ARMY CAMP — Morris C. Thomas, M. D., Major, United States Army, Fort Knox, Ky.

RESULTS OF PECTIN-AGAR FEEDING IN GASTRO-INTESTINAL TUBERCULOSIS — Paul D. Crimm, M. D., Boehne Tuberculosis Hospital, Evansville, Ind.

CLINICAL OBSERVATIONS ON RELATIVE HYPOTENSION IN RELATION TO TUBERCULOSIS — James D. Pierce, M. D., Flower Mission, Indianapolis, Ind.

COLORED MOTION PICTURES THROUGH THE BRONCHOSCOPE — Paul H. Holinger, Chicago, Ill.

BRONCHOSPIROMETRY — John D. Steele, M. D., Milwaukee, Wis.

WEST ROOM — Luncheon — 12 P. M. (All Illinois Physicians Invited) Presiding — Fred M. Meixner, M. D., President, Illinois Tuberculosis Association, Meeting for organization of an Illinois Trudeau Society.

AFTERNOON PROGRAM — 2:00 P. M.

Presiding — Sidney A. Slater, M. D., Worthington, Minn.

THE EFFECT OF REDUCED BAROMETRIC PRESSURE ON PNEUMOTHORAX — W. R. Lovelace, M. D., and H. C. Hinshaw, M. D., The Mayo Clinic, Rochester, Minn.

CHEST SURGERY IN WAR — A. L. Lockwood, M. D., Toronto, Canada

EXPERIMENTAL WORK ON RESPONSE TO BLAST — George M. Curtis, M. D., Department of Research Surgery, and James D. King, M. D., former surgeon to the Chinese Army, Columbus, Ohio.

GENERAL DISCUSSION, opened by: — A. C. Ivy, M. D., Professor of Physiology, Northwestern University, Chicago, Ill.

EVENING PROGRAM — 8:00 P. M.

Michigan Room, The X-Ray Conference, Presiding — John H. Skavlem, M. D., Cincinnati, Ohio.

GREETINGS AUXILIARY MEMBERS FROM YOUR PRESIDENT

Vacations are over and our activities are waiting; let us think seriously of our auxiliary work.

With this thought in mind, may I extend to you assurance of most hearty cooperation throughout the coming year. I trust we will keep well informed by reading and studying the aims and objectives of our Auxiliary, read the Auxiliary Bulletin, Illinois Medical Journal, and the American Medical Journal.

Convention Pledge

We pledged our Auxiliary to assist Dr. E. H. Weld, President of the Illinois State Medical Society, and a pledge to cooperate with the sale of Defense Stamps and Bonds. I urge every county to share in these activities. The sale of Bonds and Stamps typifies the good will of all organizations and the people of our Country; we are to help and never fail our men who are risking all they hold dear.

Membership

The increase of membership in our Auxiliary is the responsibility of every member in the Auxiliary. This cooperation will build up our State figures. If we, the members of this Auxiliary, will keep abreast as to the aims and objectives, we will prove that we are the strongest ally to medicine. Why? Because we are alert to the welfare of our doctors and the Auxiliary.

Benevolence Fund

Benevolence work is another objective of the Auxiliary. As members and wives of physicians, this should be one of our first contributions of the year and we ask the wives of all physicians to share in this, our great work. Years pass on, and time with memories is all that is left for those who never said, nay. May we add comfort and joy in the closing of their years.

Extra Activities

Red Cross, First Aid, Nurse's Aid, and Nutrition Programs all come under the national emergency. Do not fail to cooperate at all times. Remember the boys who are in the camps near your county — help to keep them happy; they, who have but one thought, to keep our Flag flying and our Country safe for democracy.

May I announce at this time, all our Officers

and Chairmen have ready the year's plans and will be happy to serve you.

I, too, pledge my promptness.

Sincerely yours,
Hilda B. Wanninger
Mrs. W. J. Wanninger
President,
Woman's Auxiliary to the
Illinois State Medical Society

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★ **BUY WAR BONDS** ★

SURGEONS' CONGRESS SCHEDULED FOR CLEVELAND, NOVEMBER 17 TO 20

The 1942 Clinical Congress of the American College of Surgeons, originally scheduled for October at the Stevens Hotel, Chicago, which was taken over August 1 by the United States Army Air Corps, will be held in Cleveland, with headquarters at the Cleveland Public Auditorium, from November 17 to 20, according to an announcement from the College headquarters in Chicago. The twenty-fifth annual Hospital Standardization Conference sponsored by the College will be held simultaneously.

The program of panel discussions, clinical conferences, scientific sessions, hospital meetings, and medical motion picture exhibitions at headquarters, and operative clinics and demonstrations in the local hospitals and Western Reserve University School of Medicine, has been centered around the many medical and surgical problems arising out of the prosecution of an all-out effort to win the war, emphasizing the needs of the rapidly expanding medical services of the Army and the Navy, and consideration of special problems related to the increasing activities for civilian defense.

The program of both meetings will begin with a Joint General Assembly on Tuesday morning, November 17, with addresses by Surgeon General James C. Magee of the Medical Corps, United States Army; Surgeon General Ross T. McIntire of the Medical Corps, United States Navy; Surgeon General Thomas Parran of the United States Public Health Service; Lieutenant Colonel George Baehr, Chief Medical Officer of the United States Office of Civilian Defense; Dr. Frank H. Lahey, Chairman, Directing Board, Procurement and Assignment Service; Dr. Irvin Abell, Chairman of the Board of Regents of the College and Chairman of the Health and Medical Committee of the Federal Security Agency; and Dr. W. Edward Gallie of Toronto, President of the College. The surgeons general and Colonel Baehr will also speak at the Presidential Meeting and Convocation the same evening.

EXAMINATIONS — AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on Saturday, February 13, 1943, at 2:00 P. M. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year. All applications must be in the office of the Secretary by November 16, 1942.

Effective this year there will be only one general classification of candidates, all now being required to have been out of medical school not less than eight years, having in that time completed an approved one year general rotating interneship and at least three years of approved special formal training, or its equivalent, in the seven years following the interne year. This Board's requirements for interneships and special training are similar to those of the American Medical Association since the Board and the A. M. A. are at present cooperating in a survey of acceptable institutions. All candidates must be full citizens of the United States or Canada before being eligible for admission to examinations.

All candidates will be required to take the Part I examination, which consists of a written examination and the submission of twenty-five (25) case history abstracts, and the Part II examination (oral-clinical and pathology examination). The Part I examination will be arranged so that the candidate may take it at or near his place of residence, while the Part II examination will be held late in May 1943, in that city nearest to the largest group of applicants. Time and place of this latter will be announced later.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

BIG CATS IN TEXAS

Noted by C. N. H. in the Greensboro (N. C.) Daily News

El Paso, Tex., July 4.—(AP)—David Martin decided to take a nap, with his 20-month-old son, Wayne, in the driveway of their home. Along came a cat, ran over Martin and fractured three of his ribs, but the child escaped with only some scratches.—J.A.M.A.

Medical Economics

Edited by R. K. Packard, M.D., Chairman of the Committee on Medical Economics of the Illinois State Medical Society, 826 East 61st Street, Chicago, Illinois.

During the past week I read Professor Carl J. Friedrich's book "The New Belief in the Comman Man," and also Mrs. Roosevelt's article in the June issue of the American Magazine entitled "What are we Fighting for."

I think Professor Carl J. Friedrich's book is well worth reading, if one is at all interested in our present economic, social and political changes. Mrs. Roosevelt's article is ideal and she states that we are fighting for the freedoms as set forth in the Atlantic Charter and adds to that equality of races, and the world economic equality. She states that this world economic equality can be worked out by economist. That is a simple formula but unfortunately none of our living economist have been able to offer a plan for equality in world economics, and not even one of our own domestic economics. Professor Carl J. Friedrich's book is planned to establish the common man and yet the book must have been written for the uncommon man to read, for only one who has given thought and interest to the affairs as outlined, and is conversant with the writers of the past few centuries down to the present time can follow the thought of his book. I draw from his book that it is his contention that we must have a planned economy, and that we can have a bureaucracy and a democracy at the same time. That is, that we can have a planned economy or a state economy and maintain our democratic form of government. It is somewhat like a good steak smothered in onions in which the onions do not entirely destroy the steak. He contends that the common man as an individual is not dependable as far as his judgment and conclusions regarding domestic and world problems are concerned; but he contends that collectively the common mans' judgment will most always be right providing the common man receives truthful information. He discusses propaganda and its abuses at the present time, and one wonders if he thinks it possible to have facts presented to the common man under a bureaucracy or state form of government of some type. While he discusses the evils of propaganda he sets-up in one portion of his book as an example of planned economy and social order the work of the Massachusetts Public Health Department and elaborates on what they accomplished as the results of a state plan control. One not familiar with Public Health work might be led to think that this was something entirely new, and not give credit to the commonwealth of Massachusetts for having started the Public Health program many years ago. In other words, it might be false propaganda because only one side of the story is told in his book.

He offers no safe guard by which a bureaucracy will guarantee a truthful presentation of both sides of the question to the common man. He refers to Abraham Lincoln as the best example of the common man. This, of course, seems quite strange because Lincoln was capable, above most men, of thinking individually and being right most of the time. More than that, Lincoln apparently was not swayed by criticism or public opinion and had the courage to fight for the preservation of the union for the principle that he had long expounded as an individual. It is undoubtedly true that Lincoln understood the common man, and the fact that he understood the common man made Lincoln an uncommon man. Lincoln gathered men of ability

around him, regardless of whether they were political friend or foe, a fact which again establishes him as not being in the true sense a common man.

One comes to the final conclusion, that our best students of political science, social science, political economics and reforms of various types are not able to set forth any very definite or concrete plan for the solution of our present problems.

Professor Carl J. Friedrich sees many obstacles that he fears cannot be solved by the Atlantic Charter, although he admits the ideals of the charter and sees many perils to its practical application.

The struggle between civil rights and property rights is not particularly new, however, it is mostly a development since our industrialization. No one questions the sound argument set forth for property rights or for civil rights, although a bureaucracy has a tendency to minimize the importance of property rights and perhaps over emphasizes civil rights. In a democracy both of them should keep their place and their importance without destruction of the basic principle involved in both. Those nations that have disregarded property rights on the plea that they are destructive to civil rights, and have attempted to equalize society through confiscatory taxes or actual seizure have ultimately ended up in a revolution. It would seem dangerous to over look this fact and assume that we can try the same experiment and make it work where it has always failed before. In other words, when the process of a bureaucracy of social state is once started the propaganda to the common man is handed out as it always has been under such a program. It seems dangerous to assume that we can have a bureaucracy or a social state and a democracy at the same time.

R. K. Packard, M.D.
Chairman
Committee on Medical Economics

All evidence indicates that tubercle bacilli live a very short time in rooms well supplied with unfiltered daylight. In the dosages in which they are apt to be spread by trained patients of a well-run institution, they probably do not survive in infectious quantities more than a few hours. In absolute darkness they may live several months. C. Richard Smith, Amer. Rev. of Tuber., March, 1942.

The final stages of a campaign against a disease are always the hardest because enthusiasm wanes when a cause is almost won. If we forget what an ebbing menace was like when it was at the flood, we may neglect the precautions which will keep it from rising once again. Perhaps that is one of the chief services of history — to keep a memory green until a task is done. Grace T. Hallock, Amer. Jour. of Pub. Health, May, 1942.

HOW MUCH?

Poem was written by a Hospital Corpsman who was standing by for inspection by the District Medical Officer
Submitted by Commander U. S. A. out of Seattle

The Captain entered the Dispensary,
Everything was quiet and serene,
Until he asked Smith a question,
"How much is a dose of Morphine?"

Mr. Jacobs was making motions
Chief Ruffin shook his head,
Dr. Landberg was slyly smiling,
But Smith was nearly dead.

An awful silence was in order,
Smith was open for a suggestion,
He finally blurted out "One-Eighth,"
And prayed it answered the question.

The tension eased for a moment,
Their breath again they could get,
But the Captain had only started,
"How much Morphine in a Syrette?"

The group was again excited,
And Smith was a deathly white,
He knew the Captain had him,
He'd fought a losing fight.

Yes, you're right, he missed the question,
He whispered, "Sir, I don't know,"
Smith proved to be a terrible actor,
By playing an awful show.

Again the Dispensary is calm and quiet,
Smith learned one thing, you bet,
How much a dose of Morphine is,
And how much is in a Syrette.

J.A.M.A.

TALES OF THE TIMES

Two recruits were unpacking. One, from the city, examined the other's straight-edged razor with interest.

"Gee," he said, "Don't you cut yourself pretty often with this?"

"Nope," drawled the mountaineer, "I been shavin' nigh onto five years naow, and I hain't cut myself neither time."

Medicine's Role in the War Effort

THE SELECTIVE SERVICE AND ITS MEDICAL PROBLEMS

MAJOR GENERAL LEWIS B. HERSHEY

WASHINGTON

I am happy to address your meeting as I wish to express my appreciation to you personally and from National Headquarters of Selective Service to the physicians of this country for your work and help in Selective Service. Those of you who are here represent many men at home who are also serving their country at this time.

I am fortunate in having as advisers various committees and groups in your profession who have helped and advised me in the matter of deferment of medical students, physicians, the procurement of physicians and various problems that arose in Selective Service with regard to medical matters.

There are two or three things I wish to talk to you about: first, the physical examination as now conducted in Selective Service; second, rehabilitation; and, third, I want to say something about the part Selective Service will play in the future in the selection of manpower and assignment of the medical profession.

In October 1940 the Army and Navy Selective Service Committee formulated plans to be used in the mobilization of manpower in the United States. These plans were based on the experience of World War I. The physical examinations of 1917 and 1918 were given by the local boards and the men were then inducted and sent to the Army. The Army exercised its right to reexamine these men after their arrival in camp, and as a result 250,000 were rejected and sent home. This system was obviously one to be avoided. It had resulted in burdening the transportation system with many thousands of miles of unnecessary travel. It had dislocated registrants in their everyday life to take them to camps for a short period of time and then return them to pick up the threads of their life again.

In the planning which took place in the War Department in the years since World War I, it was decided that certain general principles should be observed in induction examination. In the first place, a man should not be inducted into the service until he has passed his final physical examination. Second, this final physical examination should be given as near to his home as possible. The experience of the World War had demonstrated that the dual examination regardless of its other merits resulted in misunderstanding, uncertainty for the registrant, and the general feeling on the part of the public that a wide difference of opinion existed among doctors on the qualifications for a soldier. These principles led the Planning Division of the War Department General Staff to set up a single examination given by the Army.

When the Selective Training and Service Act was passed, the War Department did not feel that it had sufficient doctors to put this plan into effect. The result of this decision was a reversion to the dual examination system, which

Presented in the General Scientific Meetings at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1942.

had not been satisfactory during the war. Inevitably the results anticipated occurred. Men who were passed by their local board examiner made arrangements to leave civil life and were returned rejected by the army induction boards.

To rectify this situation a preinduction examination was provided by the Army. Under this method men were sent to army examining boards well ahead of their induction date. This resulted in a considerable amount of travel, but it did provide definite information to the man as to his physical qualifications prior to the time it was necessary for him to settle up his civilian business. This system would have been successful, undoubtedly, had it not been for the onset of war. War brought a change in conditions, an intensification of recruiting by the Army and the Navy. Men who had been physically examined, who knew that they were qualified for military service, became the prize pool from which recruiters drew their men. It was impossible to make any accurate estimate of how many men would be available for induction two weeks after the completion of a successful physical examination. The War Department felt that in self protection it must induct a man immediately after he was physically examined. To overcome the objection that men would be uncertain in the settling up of their business, the War Department undertook to provide emergency furloughs for those who needed additional time. This plan was not satisfactory, and ultimately the War Department decided to give furloughs to all men after their induction to permit them to close up their civilian activities.

The place of the local board examiner since the initiation of the preinduction examination has been one of uncertainty. The Selective Service System attempted to use the medical examiner of the local board for the purpose of making a screening examination, with particular emphasis on the furnishing of information concerning the emotional and mental stability of the registrant for use of the army induction board. This type of screening examination has not been satisfactory to the medical examiners. The continuing increase in the demand for doctors raises a question as to whether or not the screening examination of the registrant should be continued.

I wish to speak now about physical rehabilitation. By rehabilitation I do not refer to the voluntary kind in which a man seeks the correction of his own defects but to that plan which applies to a rehabilitation program by Selective Service for men who have been rejected by the Army. An attempt was made to publicize and popularize a rehabilitation plan for these men who had been rejected by the Army. The Army did not care to rehabilitate any one because it was too busy doing other things and in addition did not have the available physicians and hospital facilities. Selective Service was assigned the job (by the President) to rehabilitate individuals with minor correctable defects who otherwise were ready for induction.

Last autumn a large representative group from the medical profession and allied interests met in Washington to discuss rehabilitation. It was the unanimous opinion of its members that the assignment was a difficult one and that they did not want to do it but they offered their wholehearted support in the event that Selective Service undertook the task.

Before money could be secured for this plan of physical rehabilitation, war came upon us. Then the situation changed. With the problem of procuring much larger numbers of men for the armed forces, physical standards were lowered. The activities of the local boards were multiplied through increased quotas, additional registration and occupational questionnaires. Medical man hours changed from limited to precious. Twenty per cent of those formerly rejected for service were accepted or were placed in I-B classification instead of IV-F or totally rejected.

The pilot test conducted in Maryland and Virginia received able cooperation from the medical profession. The results obtained to date do not justify a program of physical rehabilitation by Selective Service.

The President has created a War Manpower Commission to coordinate all efforts pertaining to manpower. Rehabilitation is one of the methods by which our manpower may be made more efficient. I shall submit to the War Manpower Commission a report of the experience of the Selective Service System with rehabilitation for its consideration and action.

I stated in outlining this address that I wish to talk to you a moment about doctors. There is a scarcity of medical personnel, an over-all shortage. At present we need all the medical brains we have available. May I observe in passing that Selective Service must recognize a doctor on the basis of the license issued by the state. Two actions must be taken: the maximum professional use must be made immediately of every doctor we have in the services or in civilian practice; the training of additional doctors must be assisted and expedited.

No doctor should be inducted unless he will be used by the armed forces in a professional capacity. The Procurement and Assignment Service will assist the Selective Service with information and advice as to the availability of doctors. This information and all other information available on a registrant doctor will be accumulated and used by the local board in arriving at its decision. On the information so obtained the local board and it alone will decide the classification of the doctor.

Selective Service has protected the medical students. This has extended down into the premedical group. Those students accepted by medical schools for matriculation will be deferred to complete their education, provided they continue to show promise of being acceptable students. The protection of premedical students has been extended under the junior rule, which also applies to chemical, engineering and other technical students. This means that students in their last two years of premedical work who show promise of reaching the ultimate goal will be deferred so as to finish their medical education.

It has been a privilege and a pleasure to speak to you and to express my appreciation of all that you have done in Selective Service. My association with your profession convinces me that you will meet the needs of both the armed forces and our civilian population. How it will be done, the future alone can answer.

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The Army Quartermaster Corps is field-testing a new type of plastic sole for soldiers' shoes. This vinyl resin material, said to be several times tougher than leather, is flexible, serviceable, washable with soap and water, polishable, and not creaseable or checkable under conditions of ordinary wear.—*Business Week.*

PRESENT STATUS OF PROVISION AND AND SUPPLY OF PHYSICIANS

FRANK H. LAHEY, CHAIRMAN
FOR THE DIRECTING BOARD

Many thousands of medical officers have taken their oaths of office or are now in the process of being commissioned in the Army and Navy. Additional thousands of physicians under 37 years of age have been cleared by the professional and state committees for service in the Army and Navy. In some states, quotas developed by the Procurement and Assignment Service have been filled. However, with the rapid expansion of the armed forces planned during the next six months and with the growth of the military medical services, many additional thousands of medical officers will be required.

Some reduction in the number of medical officers per thousand troops is anticipated because the Army has changed its tables of organization, so that officers in the Medical Administrative Corps will be assigned to administrative positions formerly held by medically trained men.

ENROLMENT

By June 1 a hundred and thirty thousand enrolment forms and questionnaires had been returned by physicians. Although many thousands indicated that a commission in the armed forces was their first choice, relatively few applications for commissions in the medical corps of the several services had been received. This seems to have been due to a misunderstanding; namely, that enrolment with the Procurement and Assignment Service was equivalent to applying for a commission. Furthermore, lack of personnel and equipment delayed entering the data of the questionnaires on punch cards. All the information has now been coded on the punch cards. Obviously, every physician should enroll with the Procurement and Assignment Service. If the physician is enrolled, he will be benefited by receiving proper consideration from his Selective Service board, and the state chairman of the Procurement and Assignment Service will be aided in arriving at a decision as to occupational deferment and in rating a physician or dentist as available or essential.

All physicians who failed to enroll and file questionnaires are now being listed. This will be done with the aid of the National Roster and of the American Medical Association. If you have not yet filled out an enrolment form and questionnaire, you should, for your own benefit if not for proper service to your nation, *fill out the enrolment form and questionnaire at once.* If you do not have a blank form, request one immediately from the National Roster of Scientific and Specialized Personnel, 1006 U Street N.W., Washington, D. C.

THE RECRUITMENT OF PHYSICIANS

On April 18 the President issued an executive order transferring the functions of the Procurement and Assignment Service to the War Manpower Commission in the Office for Emergency Management. Previous to this the Navy established offices of Naval Officer Procurement in all naval districts throughout the United States for the most rapid processing of applications and the procurement of officers.

During the latter half of May, terms of army officers constituting medical officer recruiting boards were sent by the War Department to various states to stimulate and facilitate the recruiting of medical and dental officers for the Army. These boards are authorized to issue commissions to qualified applicants immediately. The weekly number of appointments rose sharply. Since the members of the recruiting boards are getting in contact only with those physicians and dentists who have been "cleared" by the Procurement and Assignment Service, there has been a greatly increased volume of work in this agency. To handle this additional work, the office personnel of the Procurement and Assignment Service was increased, and on July 2 its offices were moved to 1006 U Street, N.W., along with those of other divisions of the War Manpower Commission, including the National Roster of Scientific and Specialized Personnel.

With these increased facilities, proper functioning became possible. By the middle of July letters had been forwarded to fifteen hundred physicians under 37 years of age who had signified their preference to serve with the Army. Each letter contained a postcard addressed to the Surgeon General of the Army and one addressed to the War Manpower Commission, and the physician was asked to sign and forward them, thus indicating his desire to be commissioned. The sending of these letters will be continued. To expedite matters, the recruiting unit in each state is informed by the Office of the Surgeon General of the applicant's willingness to apply for a commission.

The Navy Department is furnished names by the Procurement and Assignment Service of those physicians who signify a preference for the Navy. The Bureau of Medicine and Surgery sends such physicians invitations to enroll in the Medical Corps of the United States Naval Reserve and indicates to them how they may apply according to Navy regulations. Physicians should realize that they still have freedom of choice as to the armed service to which they prefer to apply for commission. It is to be borne in mind that the Selective Service boards alone have the legal authority to draft physicians. These boards have been instructed to give every consideration to the physicians whose numbers have been called.

Thus the Procurement and Assignment Service is now functioning according to the plans originally established by the directing board and by the various committees. Its purpose, however, includes not only the listing and procurement of medical, dental and veterinary personnel for the armed forces but also the procurement and equitable allocation of medical and allied personnel for civilian service in medical schools, hospitals, industry, nonmilitary governmental agencies and civilian communities.

NEEDS OF THE CIVILIAN POPULATION

One of the first steps taken by the directing board of the Procurement and Assignment Service was the establishment of a study of the distriubtion of physicians in each of the states according to age, sex and type of practice, in relation to population. These data were utilized in meeting the needs of the armed forces, due allowance being made for the differences between states. Furthermore, the medical needs of districts in each state were roughly estimated, on the basis of one physician for each 1,500 of population. These figures are employed in determining the number of physicians to be judged "essential" in any given area. The status of individual physicians, not only in private practice, but also in hospitals, medical schools, industry and various governmental institutions, was determined only after the local authorities had been consulted, and the final decision was always left to the state committees or, in the case of dispute, to the corps area committees.

Unfortunate incidents have arisen through the commissioning of men previously declared "available" who have suddenly become "essential" because of the death, disability or enlistment of some other physician. In such cases nothing can be done by the Procurement and Assignment Service if the oath of office has been administered. However, the Navy has revoked the commissions in instances in which the withdrawal of a physician from his community was not obviously to the best interests of the general defense program. Many difficult situations have been created by the volunteering of men listed as "essential." Such a physician is just as important to the war effort as a medical officer; he should not apply for a commission unless he is certain that some one is available to take his place. In fact, in this country, as in England, the armed forces have agreed to refuse a commission to a physician or dentist so designated. The Navy likewise is doing this.

RESERVE OFFICERS

All reserve officers of the Army are now subject to call to active duty, even though they have been declared "essential"; such men were granted permission to resign prior to July 1, 1942. All reserve officers of the Navy, except interns, are placed on active duty within a month after obtaining their commissions.

MEDICAL SERVICES FOR INDUSTRIAL COMMUNITIES

Medical services must be provided for new or rapidly expanding industrial communities. This is essentially a local problem, but, if physicians are not available, men who are physically unfit or too old for military service, and who are willing to be dislocated,

must be assigned to such positions. This is a problem to which the directing board of the Procurement and Assignment Service is now giving special consideration so that suitable recommendations may be sent to the War Manpower Commission.

ADDITIONAL PROBLEMS

1. A suitable pool of physicians, including specialists, must be established from which the armed forces can draw for men with general and special training and for future needs.

2. The headquarters of Procurement and Assignment Service, now well organized and located with the National Roster of Scientific and Specialized Personnel at 1006 U Street, N.W., Washington, D. C., proposes to maintain up to date information concerning each physician, dentist and veterinarian in the United States, his assignment and his availability.

3. Consideration is being given to the utilization of the physicians who have graduated from unapproved medical schools and of citizens of co-belligerent countries, of enemy countries and of enemy occupied countries.

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RELATION OF EMERGENCY MEDICAL SERVICES TO INDUSTRIAL PLANTS

The Office of Civilian Defense, Washington, D. C., in Medical Division memorandum number 14, points out that the primary responsibility for the protection of industrial plants rests on the operators, owners and local and state governments. The War and Navy departments have included in their program the responsibility for recommending protection in certain civilian plants engaged in the production of war material. The War and Navy departments have requested all civilian manufacturing plants having important war contracts to cooperate with the local Emergency Medical Service of the U. S. Office of Civilian Defense.

All industrial plants are expected to provide medical services and first aid equipment within the plant for the care of the injured. The Office of Civilian Defense recommends that each industrial plant, in addition to providing its own medical staff and first aid equipment, should plan in collaboration with the chief of Emergency Medical Services of the locality for (1) services of ambulances and emergency medical field units when needed, (2) available beds at one or more hospitals to which the severe casualties may be transported, (3) the establishment of a casualty station of the Emergency Medical Service within a short distance of the plant and (4) obtaining the services of emergency medical field units if needed to supplement the plant medical service during an emergency.

If a plant is miles from a hospital and there is a possibility that the injured might be obliged to remain at the casualty station for hours before transfer to the hospital, the casualty station should be larger than the average for a given number of employees and be adequately equipped. It must have cots, blankets, water and heating facilities and be equipped at least with the emergency medical supplies outlined in Medical Division bulletin number 2, equipment lists 1 and 2.

To implement these instructions, section V of Medical Division bulletin number 4 is amended to include the following additional duties of the local chief of Emergency Medical Service:

During the period of preparation:

6. Protection of Industrial Plants.

(*a*) Advising all employers concerning adequate emergency medical protection to be afforded within industrial, commercial and service installations, including location of casualty stations and medical supplies where needed.

(*b*) Arranging for direct telephone lines between important installations and control center to facilitate evacuation of casualties and to provide emergency medical service with the minimum of delay.

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ILLINOIS CIVILIAN BLOOD BANK

At the suggestion of Governor Green the state of Illinois has established a civilian blood bank, and a mobile blood collecting clinic has already collected the quota of donations for Champaign, Kane and Rock Island counties and the city of Peoria and at the time of this report was collecting blood from about sixty volunteers a day in Carbondale. The state health officer, Dr. Roland R. Cross, said that in every community visited by the mobile blood collecting unit the civic organizations, industries, defense councils and hospitals have cooperated. It was expected that the immediate quota of four thousand blood donations would be reached by July 25.

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NEW DIRECTIVE ON DENTAL SERVICE DURING THE WAR

Administrative Notes from the Dental Service, Office of the Surgeon General

A new War Department Directive was issued on April 25, 1942, defining dental service during the war and rescinding the former directive on "Dental Service During the National Emergency." This new directive was published to authorize replacement of missing teeth for personnel entering the Army with insufficient teeth to masticate the Army ration. The following is the wording of the letter on this point:

"Replacement of missing teeth for military personnel will be made when in the opinion of the dental surgeon it is necessary from a health

or functional standpoint; that is, insufficient natural or artificial teeth to satisfactorily masticate the Army ration. Such replacements will be the standard type of full or partial dentures provided in the Army except that anterior teeth lost in line of duty, may be replaced by fixed bridgework when in the opinion of the dental surgeon it is advisable. This type of replacement is to be kept at a minimum consistent with the best interests of the government and the individual."

This directive also restates the limitation on dental attendance for dependents as follows: "Dental attendance for dependents will be limited to emergency treatment. Such treatment will in no instance interfere with the routine dental treatment of the military personnel."—*Army Dental Bulletin,* 13:193, No. 3, July 1942.

★ ★

COURSE IN PHYSICAL THERAPY

"Columbia University announces that beginning September, 1942, a program of professional studies for the training of Physical Therapy technicians will be offered. This training and instruction will extend over a two-year period and has been organized in compliance with the requirements set down for such programs by the Council on Medical Education and Hospitals of the American Medical Association. The course is being set up in University Extension in close relationship with the College of Physcians and Surgeons of Columbia University, the Nursing Education and Health and Physical Education Departments of Teachers College. The clinical and laboratory instruction will be given at the Vanderbilt Clinic, Neurological Institute, Presbyterian Hospital and New York Orthopedic Dispensary and Hospital.

"Two years or 60 semester hours of college, including courses in Physics and Biology, shall be required, or graduation from an accredited School of Nursing or an accredited School of Pyhsical Education.

★ ★

CONFERENCE ON VENEREAL DISEASE CONTROL NEEDS IN WARTIME

Surgeon General Thomas Parran, Presiding

Venereal disease and America's war effort will be discussed by high-ranking medical officers of the War and the Navy Departments, prominent physicians, health officers and others at a Conference in Hot Springs National Park, Arkansas, October 21-24, 1942. Headquarters will be at the Arlington Hotel.

The Conference will be held under the auspices of the United States Public Health Service in conjunction with the Eighth Annual Meeting of the American Neisserian Medical Society. Surgeon General Thomas Parran will preside. State and local health officers, veneral disease control officers, practicing physicians, and all others engaged in veneral disease control activities are urged to attend.

Subjects for discussion will include venereal disease control measures influencing the war effort, epidemiology of syphilis and gonorrhea — 1942, wartime venereal disease control education, research influencing the wartime venereal disease control program, and technics of venereal disease education.

★ ★

A LABEL FOR LIQUOR BOTTLES

In an article on "The Sale of Alcoholic Beverages," published in *Mental Hygiene* for the month of April, 1942, Drs. Alexander, Moore, and Myerson advocate changes in the present methods of labeling bottles containing intoxicating liquors. They hold that alcoholic liquors are clearly covered by the provisions of the Federal Food, Drugs, and Cosmetic Act, and should be labeled in conformity with such provisions.

The label suggested for a liquor bottle by these authors is as follows:

"DIRECTIONS FOR USE: Use moderately and not on successive days. Eat well while drinking and, if necessary, supplement food by vitamin tablets while drinking. WARNINGS May be habit-forming; not for use by children. If this beverage is indulged in consistently and immoderately, it may cause intoxication (drunkenness), later neuralgia and paralysis (neuritis) and serious mental derangement, such as delirium tremens and other curable and incurable mental diseases, as well as kidney and liver damage."—*Mental Hygiene News.*

ETIOLOGY OF HODGKINS

Seen by S. S. in N. Y. World Telegram

Bogota, N. J., Aug. 8.—A two-year battle against a gland ailment brought on by efforts to diet to qualify for the Navy Air Force ended yesterday in the death of David Wallwork, 23, former Bergen College football star. Mr. Wallwork weighed 225 pounds when he applied for admission to the service and when rejected went on a self-imposed diet that resulted in Hodgkins disease.—*J.A.M.A.*

Original Articles

MACROCYTIC ANEMIA

CECIL JAMES WATSON, M. D.
Professor of Medicine
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When invited to address you this evening, it was suggested that I might discuss some topic relating either to the liver or the blood. I have chosen the subject of macrocytic anemia with the thought that it covers common ground in these fields perhaps as well as any subject could.

If we go back for a moment into the earlier history[1] of the liver-blood relationship, we find that Galen, although ignorant of the circulation of the blood, nevertheless appreciated the position of the liver between the intestines and the heart, and regarded it as the organ of "sanguification," believing that it converted all of the chyle into blood. Galen, however, was not aware of the existence of the intestinal lymphatics to which Bartholin, centuries later, accorded so much importance that he actually relegated the liver to the minor role of a "large, dull bile-producer," rather than "maximus heroibus" in the Galenical sense. William Harvey's discovery of the circulation and recognition of the importance of the portal circulation prevented any enduring acceptance of Bartholin's view.

The success of liver therapy in pernicious anemia[2] made it clear that the liver was not only the organ of sanguification for much of the aliment, but that it contained substances of the utmost significance for the regulation of normal erythropoiesis. Actually this again is nothing more than a part of the sanguification process. The work of Castle[3] revealed that the liver is simply the storehouse for the antipernicious (AP) substance formed by the interaction of intrinsic factor from the gastric mucosa and extrinsic factor from the food. The liver removes the AP substance from the portal blood and stores whatever excess is unnecessary for the daily regulation of erythropoiesis.

Before Minot and Murphy's report in 1926, the subject of macrocytic anemia was but very poorly understood, and many of these cases were wrongly classified under the heading of pernicious anemia. The older literature contains numerous examples of hemolytic jaundice, aplastic anemia, leukemia, Hodgkin's disease, cirrhosis of the liver and other pathological states in which the anemia was classified as pernicious. The response to liver therapy, particularly as followed by the reticulocyte count[4] has helped in bringing clarity to this problem. Yet the definition of true pernicious (Addisonian) anemia is still not an easy matter. As an example of the difficulty often encountered, the problem of so-called "pernicious anemia" of pregnancy may be cited. In this condition, the morphology of the blood and the bone marrow may be identical with that of pernicious anemia; the response to liver therapy may be excellent, yet achlorhydria may be but temporary or it may not even be present; the atrophic gastritis and permanent achylia of true Addisonian anemia is often lacking. As a rule, the macrocytic anemia of pregnancy is due to a combination of the following factors: 1) Diminished gastric secretory activity including formation of both hydrochloric acid and intrinsic factor. 2) Faulty diet with diminished intake of the extrinsic

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factor. 3) Increased need of AP substance because of fetal requirements[5].

The present day concept of true Addisonian anemia therefore includes the following:

Atrophic gastritis, and achylia (often associated with glossitis)
Constitutional (familial) factor
Resultant lack of intrinsic factor (Castle)
Continued need of and response to liver therapy.

From this it is seen that true pernicious anemia is primarily due to gastric atrophy. The appearance of anemia in these individuals is, of course, often hastened or precipitated by food deficiency due to such factors as loss of teeth, change in economic status, etc.* That is to say, an individual with atrophic gastritis may get along for years with markedly reduced intrinsic factor, as long as his intake of suitable animal protein (extrinsic factor)[4] is good. When this decreases, he is likely to develop pernicious anemia quite rapidly. Thus it is implied that the intrinsic-extrinsic factor relationship obeys the law of mass action, and this appears to be true.

Some macrocytic anemias of pernicious type are purely or principally dietary in origin. This is true of the macrocytic anemia at times seen in pellagra. Moore and co-workers[6] have recently shown that the gastric contents in these patients often contain both intrinsic factor and free HCL, and that the anemia responds to extracts of beef muscle known to be rich in extrinsic factor, also, of course, to liver extract containing the finished AP substance.

Gastric secretory function and diet may both be normal, but if there is faulty absorption of the AP substance, a macrocytic anemia of "pernicious" type is apt to occur. This sequence of events is typified by many cases of sprue, particularly of the tropical variety.

Whatever the source of interference in formation or utilization of the AP substance, the bone marrow becomes more or less megaloblastic. In general, the more severe the anemia, the more diffuse the megaloblastic hyperplasia. Megaloblasts cannot be said to be entirely specific of AP substance deficiency since they are very rarely seen in small numbers in other conditions such as agranulocytosis and leukemia. In a recent case of atypical leukemia studied by the writer, megaloblasts were found in the bone marrow even after intensive liver therapy. In this case, severe anemia of macrocytic type was the outstanding feature, yet there was no response to liver treatment.

Although there are many ways that the macrocytic anemias may be classified, it is very useful both from a diagnostic and therapeutic standpoint to divide them in two groups, those with megaloblastic and those with normoblastic bone marrow (Table I). As a rule the morphologic distinction is not difficult, and the newer methods of sternal aspiration make it easy to obtain bone marrow.

TABLE I

The Various Forms of Macrocytic Anemia

I. With megaloblastic bone marrow
  A. Due to deficiency of antipernicious substance — Intrinsic factor — stomach; extrinsic factor — food
    1. True pernicious anemia — atrophic gastritis
    2. Carcinoma of stomach* — atrophic gastritis
    3. Food deficency states — extrinsic factor deficiency
    4. Sprue — absorption defect
    5. Fish tapeworm anemia — absorption defect
    6. Carcinoma of intestine — absorption defect
  B. Due to faulty utilization of antipernicious substance "Achrestic" anemia of Wilkinson. Lack of GI disturbances. Normal content of AP substance in liver. Poor response to intensive liver therapy.

II. With normoblastic bone marrow.
  A. Macrocytic hemolytic anemia — Absence of spheroidocytes; Normal fragility; "Cold" agglutinins
    1. Primary or idiopathic (Hayem-Widal).
    2. Secondary to, or associated with: Leukemia, Hodgkin's disease, chronic hyperthyroidism, chronic bleeding in an ovarian cyst, chronic arthritis, hepatitis and cirrhosis, uremia, aplastic anemia.
  B. Macrocytic anemia without increased hemolysis, associated with: Hepatic disease, pancreatic disease, uremia, and various toxic states (chronic infections and poisons)

*As noted later it is believed that most macrocytic anemias with gastric cancer simply represent associated pernicious anemia.

In general it may be said that liver therapy is specific when the bone marrow is megaloblastic, but of little or no value when normoblastic. An exception in the megaloblastic group

*In this connection it may be noted that there are occasional cases of true Addisonian anemia which are first brought into relapse during pregnancy. In these cases the pregnancy is only the precipitating factor and correspondingly it is these cases which require continued liver therapy after delivery.

is the "achrestic" anemia of Wilkinson and Israels.[7, 8] This is undoubtedly a very rare disease, and its occurrence has even been questioned. I hope that I shall de-emphasize it sufficiently by saying that I have seen but one case that appeared to correspond with Wilkinson's descriptions. The term "achrestic" (from the Greek) was employed by Wilkinson to indicate lack of utilization. As noted in the above table, it appears from the blood and bone marrow of these cases that there is a striking lack of AP substance, yet extracts prepared from their livers were quite active in the treatment of ordinary pernicious anemia[8]. These findings together with the absence of gastrointestinal disturbances and especially of atrophic gastritis, and the slight or absent response to liver therapy induced Wilkinson to designate the anemia as "achrestic." The following case may be an example of achrestic anemia.

♂, 77. Anorexia, weakness, and pallor for one month. Spleen just palpable. *Free HCl present in gastric contents.* Negative x-rays of bones and GI tract. Negative occult blood tests of feces.

Hemoglobin 26%, RBC 1.0 mill. per cu. mm. WBC 3600, neutrophiles 59%, lymph. 38%. Marked macro-anisocytosis and poikilocytosis. MCV 117. MCH 34%. MCD 8.0μ. Bone marrow diffusely megaloblastic. Slight icterus. Van den Bergh indirect. Reticulocytes 1.6% ⟶ 12.5% after intramuscular liver extract. Feces urobilinogen 445 — 1066 mg. per day (normally 40 — 280).

Death in spite of intensive liver therapy and transfusions. Permission for necropsy could not be obtained.

The delineation of a primary macrocytic hemolytic anemia,[9, 10, 11, 12] separate from the spheroidocytic anemia with increased fragility of the red blood cells, has met with objection by Dameshek [13] on the ground that the macrocytosis described in these cases is only a pseudo-macrocytosis due to the presence of large numbers of reticulocytes which are, of course, larger than the normal more mature red blood cells. This view, however, does not account for the striking difference in mean cell diameter between the spheroidocytic anemia on the one hand and the macrocytic hemolytic anemia on the other[10]. There are often as many or more reticulocytes in the former disease yet the mean corpuscular diameter is significantly decreased. This may be seen in Table II[10].

TABLE II (see Ref. 10)

	M.C.D.	M.C.V.	Retic. %
Case 1. Familial hemolytic jaundice	7.0	87.0	15.2
Case 2. Familial hemolytic jaundice	6.9	104.0	27.6
Case 3. Familial hemolytic jaundice	7.0	77.0	14.0
Case 4. Reticuloendotheliosis; macrocytic hemolytic anemia	8.25	111.0	4.6-7.0
Case 5. Splenic anemia; probable diffuse splenic fibrosis; macrocytic hemolytic anemia	8.2	119.5	4.5
Case 6. Cirrhosis of the liver; mild macrocytic hemolytic anemia	8.4	100.0	3.6
Case 7. Hemorrhagic ovarian cyst; severe macrocytic hemolytic anemia	8.8	——	15.0

Autohemagglutination due to increased titer of cold agglutinins occurs with relative frequency in the cases of macrocytic hemolytic anemia. It may be so outspoken as to cause an immediate sand-like precipitation of the red blood cells as the blood cools to below 30° C.* This clumping may actually interfere with the red blood cell count, and it is, of course, associated with an extremely rapid sedimentation velocity. If one warms a sample of blood which exhibits this phenomenon, it will be seen that the clumps disappear and the blood again becomes smooth; in other words, the agglutination is reversible. This is not true of the variety of autoagglutination observed in many cases of multiple myeloma. Although the gross appearance is the same, this agglutination is not reversible with heat, and is due not to an increased titer of cold agglutinins but rather to an excessive rouleau formation which in turn depends upon hyperglobulinemia. Recognition and distinction of these two forms of autohemagglutination is at times very helpful in differential diagnosis. Another feature which has been observed in macrocytic hemolytic anemia and not in the cases of familial hemolytic jaundice or anemia, is the hemolytic crisis *after* splenectomy.

*It is very doubtful that "cold" autoagglutination is ever directly responsible for a transfusion reaction. Since they are commonly associated, however, it is not unlikely that an increased titer of "cold" agglutinins is often accompanied by other agglutinins which are active at 37° C.

In two of our cases this nearly resulted fatally, but in both instances the hemolytic activity fortunately stopped after a number of days and the patients then went on to complete recovery. The earlier of these cases was reported previously[10]. The essential features of the latter case are given in the following:

O.H., ♀, 55. Housewife.

12-15-39. Weakness, anemia, mild intermittent jaundice 4 years. Spleen palpable 2 cm. below costal margin. Hemoglobin 44%. Red blood cells 1.74 mill., MCV 135 cu. μ, MCH 49 μgms., MCC 35%, MCD 8.1 μ. Reticulocytes 25%. Icterus index 19. Van den Bergh indirect.

Smear: Predominantly macrocytic. Some microcytes. Price—Jones mean — 7.5, 73% above normal of 7.25.

Fragility: H_1 .42; H_2 .34. Control H_1 .42; H_2 .30. Feces urobilinogen 828 mg. per day (normal 40-280). Urine urobilinogen 4.3 — 10.6 mg (normal: 0.5 — 3.0).

7-17-40* Splenectomy. Spleen weight 420 gm. Moderate diffuse reticular hyperplasia. Postoperative hemolytic crisis.

2-2-40* Hemoglobin 15%, red blood cells 0.9 mill., white blood cells 38,000.

2-13-40* Hemoglobin 21%, red blood cells 0.9 mill., Reticulocytes 42%.

3-7-40* Hemoglobin 53%, red blood cells 2.27 mill., Reticulocytes 25%. Feces urobilinogen 337 mg. per day.

3-29-40 Hemoglobin 62%, red blood cells 2.80 mill., Reticulocytes 2.9%.

10-24-40 Hemoglobin 80%, red blood cells 3.25 mill., Reticulocytes 0.6%. Icterus index 7.0.

1-17-41 Hemoglobin 75%, red blood cells 3.64 mill., Feeling very well.

2-1-42 Hemoglobin 85%, red blood cells 4.15 mill., Feeling very well.

*Numerous transfusions were necessary between these dates.

The red blood cell measurements in the above case are particularly instructive. It will be noted that the mean corpuscular volume and diameter and the mean corpuscular hemoglobin content are all increased. The mean corpuscular concentration of hemoglobin, however, is within the normal limit of 33 to 36 per cent. It has often been customary in the past to speak of hyperchromic anemias. This term simply indicated that the red cells as seen in the stained blood smears appeared to contain more than the normal amount of hemoglobin because they were more darkly staining. Actually this is not because of an increased concentration of hemoglobin, but simply that these large cells are thicker and one is looking through an increased layer of hemoglobin. Hematologists are gradually abandoning use of the term hyperchromic and are simply dividing anemias into normochromic and hypochromic type, depending entirely upon the concentration of hemoglobin in the cell. Since this rarely if ever increases beyond the normal range but commonly decreases, it is at once seen that on the basis of hemoglobin concentration, there are essentially but two types — those that are normochromic and those that are hypochromic. If all anemias are classified on the basis of red cell diameter and hemoglobin concentration, they can be placed in one of six categories, as follows:

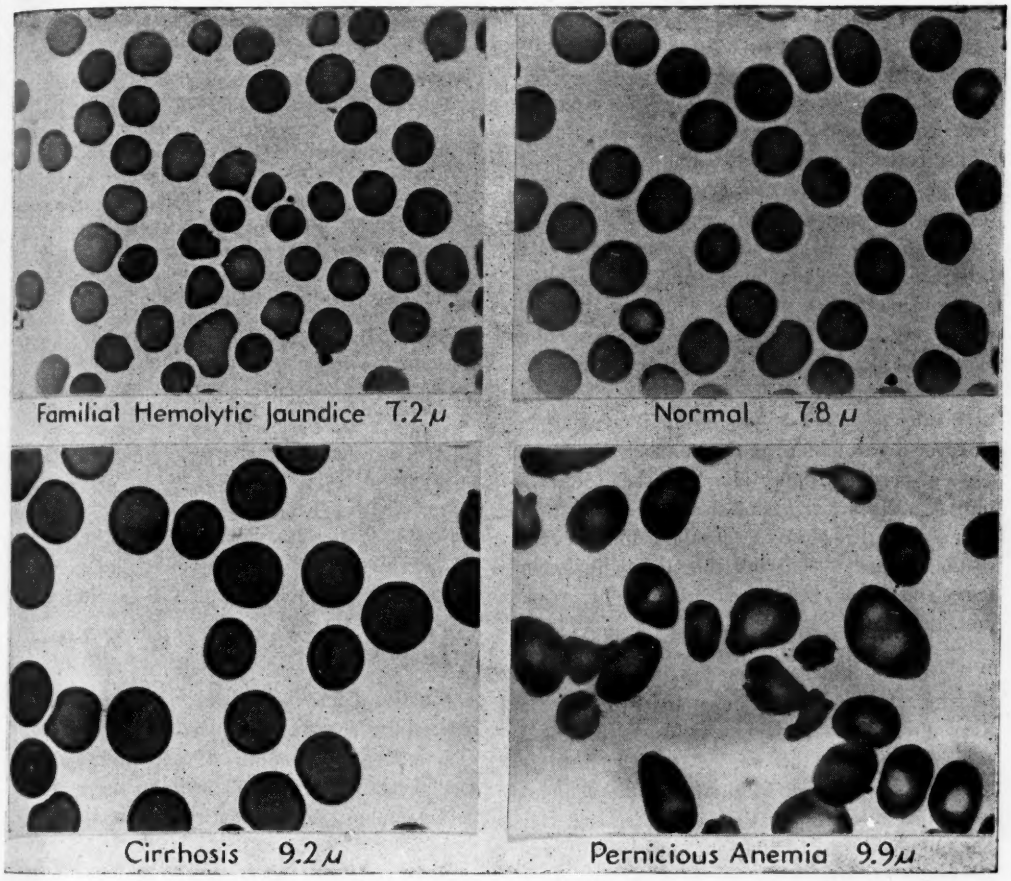
TABLE III

Classification of Anemias based on Red Cell Diameters and Hemoglobin Concentrations (MCC)*

I. Normocytic
  A. Normochromic —
    Acute blood loss
    Some aplastic and myelophthisic anemias
  B. Hypochromic —
    Mild combined deficiency anemias —
      Fe
      Extrinsic factor
    Chronic blood loss anemias
      Fe
II. Macrocytic
  A. Normochromic —
    Anemias due to lack of AP substance (megaloblastic bone marrow — pernicious and pernicious types)
    Hemolytic anemias
    Macrocytic anemia without increased hemolysis (see table I).
  B. Hypochromic —
    Combined deficiency — extrinsic factor and Fe
    Liver disease + Fe deficiency
    Chronic pancreatitis
    Certain toxic states (Pb, sulfanilamide, rheumatic fever; macrocytosis may be slight or borderline)
    Hypothyroidism
III. Microcytic
  A. Normochromic — spheroidocytic hemolytic anemia, usually familial, at times secondary to infections or poisons (sulfanilamide)
  B. Hypochromic — Fe deficiency —
    Chronic blood loss
    Achlorhydria
    Dietary

*The color index may be used instead of the MCC, but is a less accurate determination.

The above classification is of considerable value with respect to therapy. It is seen at once that liver therapy finds its chief usefulness in group II. It will often be moderately helpful in the mild deficiency anemias of group I B, the normocytic hypochromic type. In the other



A comparison of the size and shape of the red blood cells in pernicious anemia, anemia due to cirrhosis of the liver, and familial hemolytic jaundice. x 1100. Mean cell diameter determined with Pijper (Zeiss) halometer. Note the marked difference in piokilocytosis between the macrocytic anemia due to cirrhosis, and the pernicious anemia.

varieties, it is not indicated. Iron therapy need not be employed except where the hemoglobin concentration is below normal; in other words, in the three hypochromic sub-groups. So far as can be determined, iron has little or no value when the anemia is normochromic. If it becomes hypochromic after a period of liver therapy, as is often true in pernicious anemia, then iron should be added. If a given case of anemia has been classified according to this plan, it may then be treated in a rational manner. The use of "shot-gun" preparations containing both liver and iron as well as other supposedly useful substances is held to be undesirable. If the anemia was not classified before treatment with such preparations, then the physician is likely to have much greater difficulty in classifying it later. If a mixed preparation is given to the patient, considerable improvement may very well occur, but it may now be necessary to continue indefinitely with this unscientific and more expensive method of treatment, or else to allow the anemia to relapse so that it may be adequately studied and classified. Where liver therapy is indicated, it should be parenteral, both because its effect given in this way is much more rapid and decisive so that more diagnostic information is gained, and also because it is less expensive and because the patient is obliged to return to

the doctor at intervals for his treatment and is thus kept under observation indefinitely. This is a very important point, especially in the treatment of pernicious anemia. It has been our experience that oral therapy is attended by a much higher percentage of relapses, and by the appearance of many more nervous complications. Further than this, the patient who is being treated for pernicious anemia must be watched carefully for the development of cancer of the stomach, since atrophic gastritis which we have already seen to be the forerunner of pernicious anemia is likewise the type of stomach in which carcinoma is most likely to develop. Together with others[14, 15] we have seen an increasing incidence of carcinoma of the stomach in treated cases of pernicious anemia. Now that the latter individuals are being kept alive by liver therapy, time is permitted for the development of cancer of the stomach. It is felt that this will become more and more clearly recognized as time goes on.

A word should be devoted to the question of treating the macrocytic anemia associated with liver disease, particularly cirrhosis. It was at first believed that this was due to a poor storage or disturbance in formation of the antipernicious substance, because of the liver disease. This has not proven to be the case, and liver therapy in these patients has proven generally disappointing. Furthermore, the cirrhotic liver has been shown to contain an adequate amount of antipernicious substance[16]. There are occasional cases of liver disease, nevertheless, in which the parenteral administration of liver extract is of some benefit to the anemia. In such instances it is not improbable that a deficiency of antipernicious substance has resulted from poor diet (anorexia) or perhaps from a functional depression of gastric secretory activity. In any event, liver therapy should be tried in patients who have liver disease and anemia, but too much should not be expected of it.

The occurrence of macrocytic hemolytic anemia in association with leukemia and Hodgkin's disease has been discussed previously[10], but deserves further emphasis. In some instances the features of hemolytic anemia may dominate the clinical picture. The following case is illustrative:

J. S., ♂, 55. **Farmer.**

Weakness, pallor, enlarged spleen 1 month.

11-16-38. Hgb. 35%, red blood cells 1.63 mill. per cu. mm., white blood cells 14,300, with 77% lymphocytes, occasionally immature. Mean corpuscular volume 111 cu μ; mean cell diameter (halometer) 8.25 μ; mean corpuscular hemoglobin 33$\mu\mu$g.; Mean corpuscular hemoglobin concentration 30%. Reticulocytes 4.6 — 7.0%. Feces urobilinogen 1315 mg. per day (normally 40 — 280). "Cold" autoagglutination. Multiple transfusions. Reactions. Only slight benefit.

4-19-39. Hgb. 46%. Red blood cells 2.6. Splenectomy. 2200 gm. Definite histologic evidence of lymphatic leukemia. Marked improvement in blood and general symptoms. No transfusions required for 5 months.

5-24-39. Hgb. 59%, RBC 3.3, Feces urobilinogen 180 mg. per day.

8-14-39. Hgb. 49%, RBC 2.1, Feces urobilinogen 156 mg. per day.

9-30-39. Hgb. 38%, RBC 1.2, Feces urobilinogen 1290 mg. per day.

12-20-39. **Exitus.**

Finally, it may be well to make brief mention of certain aspects of aplastic or "refractory" anemia[17]. Some of these cases are distinctly macrocytic in variety. The following is a typical example of a macrocytic aplastic anemia.

REFRACTORY (APLASTIC) MACROCYTIC ANEMIA

B.B., ♀, 67.

Weakness, fatigue 2 years. Pallor, dyspnea, epistaxis 1 year. Questionable improvement after oral liver and Fe.

1-16-39. Moderate atrophy of tongue. No icterus. Buccal petechiae and + cuff test. Spleen not palpable.
Hgb. 3.2 gms., RBC 800,000. C. I. 1.2. M. C. V. 155.0. M.C.D. 9.0 μ. Reticulocytes 2.6%. Feces urobilinogen 163-639 mg. per day (normally 40-280). WBC 2300, lymph. 85%, Platelets 20,000. Bone marrow: PMN's, plasma cells, histiocytes; almost no immature RBC.

8-27-39. Hgb. 1.9 gms., RBC 600,000. Retic. 0.2%. Transfusion reaction.

9-6-39. Exitus. Necropsy: No red bone marrow in vertebrae, ribs, femur.

The above case illustates several important features that also have been observed in a number of similar instances. It is noted that there is considerable fluctuation in the rate of blood

destruction. Part of the time, urobilinogen excretion in the feces is well above the normal, indicating a considerable hemolytic component at least during these periods. The reticulocyte percentage at the time the patient was first studied was slightly elevated. The bone marrow at this time failed to reveal evidence of any active erythropoiesis. It can only be assumed that the reticulocytes were coming from small active islands in the bone marrow which were not represented in the material obtained by the sternal aspiration. Later on it is noted that the reticulocytes diminish almost to zero level. This decline is in association with progression of the anemia. It is probable that at this time there were no longer any active areas of erythropoiesis in the bone marrow. None were observed at autopsy. In this case and in others of the same type, liver therapy has proven of no value. From the standpoint of immediate diagnosis and prognosis and what to expect from treatment, the presence of marked leukopenia and thrombocytopenia are exceedingly helpful, since they point at once to a general diminution in marrow activity indicative only of aplastic anemia or so-called panmyelophthisis.

SUMMARY

There are many varieties of macrocytic anemia. From a fundamental and therapeutic standpoint they are best separated into those with megaloblastic and those with normoblastic bone marrow. Diffuse megaloblastic hyperplasia indicates deficiency or poor utilization of the antipernicious substance. True Addisonian (pernicious) anemia is the prototype of this group. It is characterized by atrophic gastritis and achylia gastrica whose occurrence probably depend to an important extent on constitutional factors. It is further characterized in the main, by permanent need of and response to liver extract containing antipernicious substance. Other macrocytic anemias due to deficiency of AP substance are on the basis of faulty diet, or faulty absorption. Achrestic anemia is probably due to faulty utilization. An example of this type is cited.

The macrocytic anemias with normoblastic bone marrow include those of hemolytic type, both primary and secondary, and those without increased hemolysis. Various forms are discussed and examples cited.

From a therapeutic standpoint, macrocytic anemias should also be classified as to whether they are normochromic or hypochromic. Iron therapy is indicated in the latter, but not in the former. Liver extract therapy is indicated in both groups if the bone marrow is megaloblastic. Otherwise it is unlikely to be effective. Treatment with mixed preparations is undesirable, especially if it precedes accurate classification of type.

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THE USE OF ANTERIOR PITUITARY EXTRACT IN THE TREATMENT OF ALLERGY

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CHAMPAIGN

Allergy is as old as medicine; 1500 years ago Galen described asthma. Of more recent time, the terms *hyper-sensitivity, anaphylaxis, allergy,* and *atopic* have been advocated and are commonly used by the profession. Today the trend is toward the use of the term *anaphylaxis* to designate the hypersensitivity produced in research animals, the term *allergy* being reserved for hypersensitivity in the human.

ETIOLOGY

The etiology of allergy may be classified into primary and secondary. Under the heading of primary etiology we consider the individual with all the abnormal structures and functions which may, by mechanical, physiological, or biochemical means, produce a condition whereby the individual responds allergically to the secondary etiological factors.

There are many secondary factors; of these, proteins (contained in plants, animals, and chemicals) are outstanding, physical and chemical agents not infrequent. Proteins are contained in all animals, plants, bacteria, and fungi, nearly all foods, and many chemicals. There are 39 x 10^{26} individual kinds of proteins. If each protein molecule were a two-inch cube, taking one of each kind, there would be sufficient to pave the entire western hemisphere nearly four times. Associate this figure with 1,300,000 people in this country who have major allergy, and the problem of manufacturing allergens, examining, testing, and desensitizing all allergic individuals to these proteins becomes an impossibility. Fortunately, not all proteins are toxic or allergenic to man.

Of the physical agents, cold, heat, and light rays are the most frequent offenders. A large number of drugs and chemicals are among the secondary factors.

The secondary etiological factors have been studied over the greater portion of the world; the length and breadth of our nation, from the earth's surface to great heights, on building tops and by airplane flights over our Great Lakes and territories; in the laboratories, by chemical methods, microscopic and vivisection. Let us remember this good work that has been done while we turn our attention to, and study the individual who has allergy, and not so much to the allergen that has the individual.

PRIMARY ETIOLOGY

Inheritance: The heredity of allergy is transmitted from the parent to the progeny in the chromosomes of the primordial cells, the same as are our statures, features, color of our hair, eyes, skin, etc., that make us look like our ancestors. Besides these, we inherit structures and functions of uncountable cells, tissues, organs, and glands, which determine to a great extent the biological chemistry in which we live and function.

Physiology: In the allergic individual, an abnormal biochemistry is present which is the result of abnormal cell and tissue function, producing further abnormal biochemistry and cell function, causing a vicious cycle with the typical changes of function and structures of allergy and anaphylaxis which are, decrease in rate of blood flow, diminished blood volume, fall of blood pressure, escape of plasma in the tissue spaces, and production of edema, and eosinophilic infiltration.

Steinfield, Ettleson, and Hodes have cited the following action of adrenal cortical hormone: regulation of potassium and sodium balances, increased metabolic rate, regulates cell-plasma ratio. In shock it increases the blood volume and rate of flow and raises the alkali reserve. It also helps the shifting of fluids and electrolytes, restoration of water balance, and utilization of vitamins, increases resistance to infection, and is an important factor in Hypophysogonadal relationship.

The actions of adrenal cortical hormone are physiologically antagonistic to those pathophysiological reactions of allergy. The use of this hormone in the treatment of allergy has met with varied results; indeed, in some cases results have been very good.

About thirty-five years ago, Harvey Cushing observed that the pituitary gland exerted a control over the entire endocrine system. His observations have been corroborated by many investigators. In 1930, Smith observed that

atrophy of the adrenal cortex constantly followed hypophysectomy. He showed that the cortical atrophy could be replaced by anterior pituitary implants or daily injections of saline suspensions of anterior pituitary. Emery and Atwill in 1933 published the results of their research. They found a marked hypertrophy of the adrenal glands following the administration of a preparation of whole sheep pituitary. The mean weight of the adrenals of the injected rats exceeded that of the normal controls (litter mates) by 45.2, 118.3, and 62.6 per cent respectively in three groups.

In 1939, Molmut demonstrated that anaphylactic shock was very much increased in hypophysectomized animals as compared to non-operated controls. The longer the time from operation to administration of the shock material (37 days), the greater were the shock symptoms.

Wasserman, Broh-Kahn, and Mirsky have shown that insulin has antigenic properties. Von Haam and Rosenfeld found that female sex hormones increase the resistance of mice to a virulent strain of type one pneumococcus, and that in rabbits a definite increase in specific and non-specific antibodies followed the administration of large doses of female sex hormone. Bischoff and Lyons, in 1939, stated that mammotropin from beef and sheep pituitaries have antigenic properties and are not species-specific. These and findings of other investigators demonstrate the immunological and antiallergenic properties of anterior pituitary trophins.

In 1941 Goldzieher reported a series of 50 consecutive cases of severe headaches, most of which were of the characteristic migrain type. Clinically the frequency of vasomotor instability and the prevalance of endocrine stigmatization were noted. The treatment consisted of diet, medication, and endocrine therapy, consisting of posterior pituitary extract, diuresis, and salt elimination. He prefers giving the injections properly spaced not more than twice a week, and in conjunction with a potent anterior lobe extract. The author states that treatment should continue for three months. Of the 50 patients treated 40, or 80 per cent, were completely and permanently relieved by the treatment, while 9 showed considerable improvement both as to frequency and severity of headaches. Only one, or 2 per cent, showed little improvement.

Histamine as an etiological agent in allergy and anaphylaxis has recently appeared extensively in the medical literature. That histamine is an activating agent in the production of allergic and anaphylactic reactions, I concede. This, however, does not place the blame where it rightfully belongs. Histamine is a normal biochemical agent; when contained in the cells and tissues in normal amounts, allergic symptoms do not occur from this source. Only where there is an excess do we have allergic reactions from histamine. The presence of excess histamine can be one of two things, either excessive production or insufficient hydrolyzation (breaking down) after its formation. It is formed in the body by cell metabolism, hydrolysis of proteins, and by bacterial action. It is broken down, or rather built up, into human protein by deaminizing enzymes. If either of these physiological processes are abnormal and an excess of histamine is present in the cells and tissues, the fault therefore is one of physiology and not with the agent produced, histamine.

In viewing the subject from the standpoint of the patient who has allergy, we see an abnormal biological chemistry, the result of, and resulting in, abnormal functions of the endocrine system and other chemical factories, abnormal autonomic and somatic nervous systems, neuromuscular, gastrointestinal, cardiovascular, renal, dermal, visual, and psychic systems, resulting in all kinds of allergic manifestations which do not occur in the normal or non-allergic. To bring this out more clearly, in hayfever, proteins of pollens come in contact with the upper respiratory mucosa in the non-allergic and allergic alike; in the allergic chemical reactions take place resulting in irritants to the mucosa and nerve endings. Nature resists in the only way she can, by producing congestion locally, increasing secretions, washing off the pollens, and diluting the remainder. This not being sufficient, impulses are sent to the diaphragm, which snaps, causing a sneeze, blowing the offending material from the surface. What more could a fair-minded individual expect from structures that

are inheritantly allergic? To change this environment and as much as possible the inheritant tendencies, the treatment must of necessity be directed to obtain permanent results. This is accomplished by changing the abnormal functions involved in the production of abnormal biological chemistry to or toward the normal, thus creating a normal environment in which to live and function.

LOGIC OF TREATMENT

The outstanding points that led to the use of anterior pituitary extract in the treatment of allergy was the symptomatic relief experienced by patients who suffered from asthma, hayfever, urticaria, angioneurotic edema, etc., by the proper use of epinephrine, calcium, later enzymes, pancreatic and tissue. We all know that epinephrine will give temporary symptomatic relief to these patients. This led me to believe that in the allergic there is an adrenal deficiency in the production of epinephrine. The results obtained in some of the allergic patients by intravenous or oral administration of large doses of calcium caused me to look for further evidence. Here it was found that one of the functions of the para-thyroids is to ionize calcium, giving the calcium atom an electric charge, thus preparing it for the autonomic and somatic nervous systems. Normally 20 to 27 per cent of the calcium in the body is in the ionic state. If this is kept at a high normal level with a normal intake, there would be no symptoms from this source and no relief by additional administration of calcium.

Proteins, when hydrolyzed, lose their allergenic properties. The hydrolysis of proteins is the result of enzymatic action; thus we look to a method of increasing the enzymes, pancreatic and tissue, histaminase and other intermediary hydrolyzers to hydrolyze histamine and other intermediary biochemical agents that may have allergenic properties.

The anterior pituitary is known to have adrenotrophin, pancreatrophin, parathyrotrophin, gonadotrophin, mamotrophin, and many other trophins. Some of these are clearly associated with the primary etiology of allergy as demonstrated by research and clinical experience. We therefore looked logically to the anterior pituitary for the desired remedy in the treatment of allergy.

METHOD OF TREATMENT

The method we have found to be the most successful is to administer, subcutaneously, anterior pituitary extract equivalent to 18.5 gr. fresh gland once a day for seven to ten days, then three times a week for two or three weeks, or longer, if necessary, until relief is obtained, then twice a week, and later once a week, with variations to fit the individual case. Some patients require much more treatment than do others. The average, for fairly permanent relief of asthma, hayfever, and migrain, and other allergic manifestations, is about 25 injections. In hayfever patients, the treatment should begin preferably two or three months before the anticipated onset of symptoms.

Patients who are sensitive to foods should be put on an elimination diet until symptom free. After a period of 2 weeks or more of freedom from symptoms, a variety of foods can be added gradually. This should not be too rapid, giving time for the structure and chemistry of the body to be transformed from an abnormal toward a normal state. This may take several months.

Patients who have been sufficiently treated with anterior pituitary and have become symptom-free, remain so for a variable time, from a few months to as many years. When symptoms return, a repetition of the treatment is indicated, usually requiring much less of the extract and a shorter period of treatment for clinical results than with the original treatment.

The treatment should be adjusted to the individual as an individual, rather than to a specific disease or symptom of a disease. The treatment of a patient ill with allergy implies more than the obtaining of symptomatic relief by epinephrine, etc.; it implies the process of altering his physiology to adjust his biochemistry and in turn his physiology so that he will no longer react to a major degree in an allergic manner.

Symptomatic Relief: Treatment directed toward obtaining symptomatic relief should be instituted until more permanent results can be obtained with anterior pituitary extract.

Results: In a previous report of a series of 50 cases, 82 per cent received good results (70 to 100 per cent symptomatic relief), 12 per cent fair results (less than 70 per cent relief),

6 per cent received little or no relief. After eleven years of personal experience with 300 cases and reports received from other physicians using the same method of treatment, I find the above figures approximately correct.

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PROBLEMS IN THE TREATMENT OF DIABETES MELLITUS

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Diabetes mellitus in itself is a disease whose treatment baffles a majority of the general practioners of today. The treatment of this disease requires a knowledge of dietetics and it is only in recent years that this latter subject has entered into the medical curriculum. Even now the average medical student gets only a small smattering of dietetics. For the general practitioner in active practice, medicine draws so heavily upon his time that he is unable to study this subject. Yet, in order to engage in the treatment of even mild uncomplicated cases, a thorough knowledge of the carbohydrate, protein and fat values of food is necessary. In addition, a practical knowledge of the amounts of various foods needed to satisfy the human stomach is also required. To this must be added variation in the diet to suit the patient's likes and dislikes. One of the big reasons for diabetics failing to remain on good management is their dissatisfaction with the types and amounts of the foods they are given. For these reasons one cannot copy diets from books and expect them to apply to the patient even though the caloric values are correct. The patient's attitude toward the diet as well as his physical condition plays a part in the construction of that diet. The diet must please the patient as to amounts, likes and dislikes, and variety or the patient soon fails to adhere to his treatment.

OUTLINE

A. Non-complicated cases.
   1. The average diabetic diet.
   2. The mild diabetic vs. the more severe.
   3. The diabetic child.
   4. The sedentary diabetic.
   5. The heavy laborer.
   6. The underweight individual.
   7. The obese individual.

B. Cases of diabetes complicated by medical diseases.
   1. The common cold and other mild conditions.
   2. Pneumonia and other severe medical conditions necessitating a liquid diet.
   3. The unconscious patient and other patients unable to eat or drink.
   4. The gastro-enteritis patient.
   5. The cardiac patient.
   6. The nephritic patient.
   7. The peptic ulcer patient.

C. Cases of diabetes complicated by surgical conditions.
   1. Infections and surgical conditions not necessitating major surgery.
   2. Fractures, especially those requiring reduction under anesthesia.
   3. Major surgical operations in the diabetic.

A. THE TREATMENT OF THE NON-COMPLICATED CASE OF DIABETES MELLITUS

The average diabetic in good health and doing moderate work requires a diet providing about 35 calories per kilogram body-weight. This diet should also provide from two to three grams of carbohydrate per kilo and about one gram of protein per kilo body-weight. Knowing the various carbohydrate, protein and fat values of foods, the diet is computed accordingly. This takes care of the metabolic requirements of the patient. In order to take care of his likes and dislikes the types and amounts of foods which he

prefers are given to him, within reasonable limits, of course. This diet that is given him according to the rules laid down is, however, only a basic diet. The patient should also be given printed lists of so-called "substitutions." For example, instead of 50 gms. of lean meat, the patient may have 66 gms. of halibut, 58 gms. of beef-liver, 46 gms. of turkey, or 40 gms. of American cheese and so on. A list of such substitutions for meat, bread, vegetables, fruits, milk and cream should be given to every patient. This creates a variety of diet for him and increases his chances of following such a regime.

The patient following this diet may or may not be able to handle this food. If he still has a glycosuria and hyperglycemia, insulin may have to be added. For this purpose, we have regular insulin, crystalline insulin, and protamine-zinc insulin. Because of its slower activity, protamine-zinc insulin may be used in one daily dose given before breakfast. If that dose is over 50 units per day, both regular and protamine-zinc insulin may be required. Regular and crystalline insulin may be given from one to three times daily before meals. If the daily insulin requirement is 25 units or less, one dose before breakfast may suffice. If more than 25 units is required, two and sometimes three doses are necessary. In using two doses daily, the morning dose is roughly twice the amount of the evening dose which is given before dinner in the evening. Reactions before lunch and dinner may make three doses daily necessary. The crystalline insulin is required particularly where there are allergic reactions to the regular insulin which contains more animal protein material than the crystalline insulin. Where large doses of insulin and large amounts of food are necessary, the use of protamine-zinc insulin may be complicated by glycosuria after meals. This can be corrected by the use of regular insulin in the morning or by dividing the diet into four meals, the last meal being given at bedtime. Sufficient insulin, whichever kind is used, should be given so as to produce a sugar-free urine and a normal fasting blood-sugar.

The very mild diabetics may require no insulin at all. As a matter of fact, one-third of those patients who require insulin in the beginning to desugarize may later require no insulin whatever. This is due to the well known fact that the overworked pancreas, being relieved of its overloading, usually develops an increase in activity and causes an increase in the patient's tolerance. In many of the mild cases of diabetes, of course, the condition may be so mild as to not even require a quantitative diet. These can be handled usually with a diet qualitatively low in carbohydrates. These milder diabetics are usually the aged senile individuals who develop diabetes in old age.

It is a maxim that the older the diabetic, the milder the insulin effect. In the senile diabetic, there is a milder response to insulin than there is in the diabetic under 35 years of age. If two diabetics aged 20 and 60 years respectively have a glycosuria of 10 gms. of sugar daily, the younger individual may require ten units of insulin while the older requires 30 units daily to clear up the glycosuria. In other words, a given amount of insulin will handle more sugar in the younger diabetic than it will in the older diabetic. It seems that age brings with it a resistance toward insulin.

In addition to this, the younger individual with his so-called "brittle" diabetes will have more violent insulin reactions than the older person and small over-doses of insulin which might affect the elderly diabetic slightly if at all will produce marked insulin reactions in the young person. The younger diabetic apparently seems more sensitive toward insulin. His diabetic condition also varies correspondingly within wider limits with intercurrent illnesses. This accounts for the fact that the younger diabetic is more prone to develop acidosis and coma than the older diabetic and therefore must be watched more closely during intercurrent illness.

The diabetic child is probably the most difficult diabetic we have to control. Besides the brittleness of his diabetes there is the problem of training the child to resist all the temptations characteristic of childhood. The doses of insulin necessary are usually small. In some instances, one unit of insulin may handle 10 gms. of sugar passed in the urine. For this reason greater caution must be used in increasing the insulin dosage. Increased activity burns sugar more rapidly due to the power of exercising muscles to utilize sugar. As a result insulin reactions are much

more common in these diabetic youngsters. On days when they play hard their insulin dosage should be decreased or their food intake increased to allow for the increased muscular activity. The caloric requirements are also greater in the diabetic child. Children of four years of age or less require approximately 75 calories per kilo body-weight. Children at six years to ten years need 60 to 65 calories and at ten to 17 years, 60 to 45 calories per kilo weight.* Inadequate amounts of food to diabetic children or continued poor control result in decreased growth and frequent periods of illness.

Just as children require more calories per kilo body-weight the farmer and other individuals who do heavy labor also require more food. 40 to 45 calories per kilo body-weight are necessary to keep up their body-weight. The sedentary individual, on the other hand, who does little physical or mental work, requires less food, only 25 or 30 callories per kilo. Patients at bed rest need only 25 calories.

Many diabetics come to the physician either overweight or underweight. These must be handled accordingly. The obese individual is given only 15 calories per kilo weight. However, the decrease in calories is made at the expense of the fat and carbohydrate intake chiefly. The protein intake should be maintained at ¾ gm. per kilo weight to prevent loss in muscle substance due to a negative protein balance. The underweight individual going in the opposite direction is given 50 to 60 calories per kilo body-weight. In his diet the protein should be increased in a similar proportion as are the fats and carbohydrates.

A consideration of these problems present in the average uncomplicated cases of diabetes should make it clear that a thorough knowledge of dietetics is absolutely necessary as a basic requirement for treating diabetes. Going from these simpler problems we pass next to those diabetics whose disease is complicated by medical or surgical conditions.

B. DIABETES COMPLICATED BY MEDICAL DISEASES

In the life of every diabetic there arises a variety of medical conditions which compel the attending physician to alter his treatment. As a general rule and especially with infectious diseases, the more severe the illness the greater will be the aggravation of the diabetic condition. Every patient should be taught this fact and warned to examine his urine regularly in the event of a mild intercurrent illness. The finding of increasing amounts of sugar should be reason enough for him to consult his physician. Otherwise acidosis and coma may result.

The common cold is the most frequent condition upsetting a diabetic condition. It usually aggravates a diabetic condition and simply calls for an increased insulin dose to clear up the glycosuria. If the condition develops into a severe upper respiratory infection with loss of appetite and toxemia, further measures must be taken. Fluid intake should be increased and a portion of these fluids should be fruit juices. These may be given as a substitution for the vegetables, meat and potatoes that the patient cannot or will not eat, and their glucose value should be exactly that of the foods which they replace so as not to upset the diabetic balance. The amount of glucose produced by any food (the glucose value) can easily be computed from the fomula:

$$\text{Glucose value} = 100\%\ \text{carbohydrate} + 58\%\ \text{protein} + 10\%\ \text{fat}.$$

Knowing the glucose value of the food which is to be omitted and knowing the glucose value of the fruit juices or milk we can calculate exactly how much fruit juice to give in place of the omitted foods so that the diabetic balance is undisturbed. During such infections the urine should be tested three times daily and regular insulin added as necessary.

In still more severe conditions such as lobar pneumonia the diet will necessarily be replaced completely by fluids such as milk and fruit juices. Here is instituted a form of management which can be termed an "emergency schedule." According to this schedule 30 gms. to 50 gms. of glucose are administered every six hours along with regular insulin every six hours, the dose being dependent upon the urine test for sugar done at the beginning of each six-hour period. The 30 to 50 gms. of glucose can be given in the form of orange juice, milk or glucose solution by vein or hypodermoclysis. 30 gms. of glucose is equivalent to 400 gms. of half milk and cream or 300 gms. of orange juice (or any 10 per cent. fruit juice). 30 gms. of glucose or glucose

equivalent every six hours are required because 120 gms. of glucose daily is necessary in order to burn the fats completely and thus avert the dangers of acidosis and coma. If there is an insufficient amount of glucose burned there is an incomplete breaking down of the fats in metabolism with a resultant production of acetone bodies and a clinical acidosis. The urine should be tested for sugar every six hours and the test reported to the physician who on this basis can direct the amount of insulin to be given at the beginning of each six-hour period. This makes it necessary that the physician be continuously within call of the patient's attendant. Insulin dosage in acute conditions such as pneumonia or other high fevers cannot be determined for 24 hours in advance with any degree of accuracy. Thus it is imperative that the physician be notified of the urine state at least every six hours. Some investigators test the urine as frequently as every three hours and give insulin every three hours.

If the patient is so acutely ill from an acute infectious disease that he cannot drink adequately or, if he is unconscious, intravenous or subcutaneous fluids containing glucose in five to ten per cent. concentration should be used. Thus 1,000 ccm. 5 per cent glucose can be given by continuous intravenous drip every six hours three or four times daily. The insulin may be added directly to the intravenous solution. The urine should be tested every three to six hours and the insulin content of the intravenous solution altered accordingly when the bottles of intravenous solution are changed or renewed. In between these changes when it is inconvenient to add insulin to the intravenous bottles, insulin can be injected by syringe if necessary for increases of sugar occurring in the urine. By this method there is no difficulty in keeping the patient fairly sugar-free. Regular insulin is used throughout of course. If the patient had been maintained on a standard dose of protamine-zinc insulin before his intercurrent illness began, this dose of protamine-zinc insulin may be continued daily and regular insulin given just as described above. In this instance one is simply treating a diabetes which is rendered that much milder or less severe by the protamine-zinc insulin. The continuation of the protamine-zinc insulin administration does not alter the schedule of emergency treatment in any way.

In addition to unconsciousness and severe toxemia of acute infectious diseases, acute gastro-enteritis and pyloric obstruction may compel intravenous treatment by the emergency schedule. Minor degrees of gastro-enteritis and colitis call for the substitution of milk for foods such as vegetables and fruits in terms of their glucose equivalent. Again the urine is tested for sugar and diacetic acid three or four times daily. Acidosis must be watched for especially in diarrheal conditions since food absorption is cut down with resultant decreased glucose metabolism and secondary production of acetone bodies with acidosis and coma.

The peptic ulcer patient occasionally suffers from diabetes mellitus. Here the routine Sippy management of three ounces of milk and cream hourly, modified meals and alkaline powders may be followed. If the diabetes is severe enough to require insulin, the milk and cream and food should be weighed and regular or protamine-zinc insulin administered just as in the average uncomplicated case of diabetes.

The cardiac patient frequently is a diabetic. Here the changes in management are chiefly dietary. In the construction of the cardiac diet the food should be of low volume and of sufficient caloric and protein content. This of course will result in a diet high in carbohydrate with perhaps an increase in insulin. The diabetic patient who suffers from coronary disease or angina pectoris should not be controlled as strictly as the average patient from a sugar-free point of view. A lowered blood-sugar in these individuals may result in anginal or coronary attacks with disastrous consequences. Therefore these patients do better showing slight traces of sugar in the urine. Perhaps all cardiac patients would do better in this respect since a greater supply of sugar is thus available for the heart muscle. The tonic effect of intravenous glucose on the heart muscle is well recognized.

The diabetic patient with nephritis presents problems in management. The acute nephritic requires an increased amount of protein in the diet to compensate for his loss through albuminuria. The chronic nephritic with a normal blood chemistry requires no essential dietary changes. However, the diabetic who has nephritis and suffers nitrogen retention must be placed on a diet low in protein. This is accomplished

by eliminating from the diet such high protein foods as meat, eggs, navy beans, etc. Glycosuria is cleared with regular insulin as a rule in these more severe cases. A diet in the edematous patient may require reduction in fluids such as milk, cream, and fruit juices, leaving the diet more or less of high carbohydrate nature with low protein, low salt, and low fluid intake.

C. DIABETES COMPLICATED BY SURGICAL CONDITIONS

The minor surgical conditions such as infections merely call for increased vigilance with respect to the insulin requirements. Infections of the feet may, if severe enough, aggravate the diabetes and call for an increase in the dosage of regular insulin. If the patient is on protamine-zinc insulin regular insulin is given in addition as necessary before meals. One, two or three doses daily may be necessary depending upon the severity of the diabetic condition. The urine should be tested for sugar before each meal and insulin given as necessary. The same treatment should be followed with the conservative treatment of gangrene where no immediate operation is contemplated and an extended period of bed rest with local treatment to the extremity is required.

Minor surgical operations using local anesthetics usually aggravate the diabetes slightly. The presence of increased amounts of sugar calls for added regular insulin. In all conditions with infection or in which minor surgery is done a sugar-free urine is more conducive toward a favorable outcome. Minor surgical operations should not be done in the presence of acidosis and coma but should be postponed 12 to 24 hours until the acidosis has been eliminated by means of the emergency schedule of treatment as previously described using regular insulin every three to six hours and covering the insulin with intravenous glucose or simple liquid feedings of orange juice or milk. Glycosuria alone does not prevent the performance of minor surgical operations under local anesthetics provided that the means are available for testing the urine and administering insulin three or four times daily so as to clear up the glycosuria within a few hours after operation.

Severe fractures cause an aggravation of diabetes in diabetic individuals. The shock of the fracture plus the shock of reduction under general anesthesia can push a moderately severe diabetic into acidosis and coma rather easily. In such cases the fracture reductions should be postponed until the urine shows only small amounts or less of sugar after emergency schedule treatment. Before reduction under general anesthesia it is well in the insulin patient to give him one-fourth of his daily insulin dose (using regular insulin) before anesthetizing him. All general anesthesias cause glycosuria due to aggravation of the diabetes. Ether aggravates more than does ethylene. After all severe fractures and fracture reductions emergency schedule treatment should be followed.

With major surgical operations on diabetics it is well to hospitalize the patient at least 24 hours in advance of the operation date. During these 24 hours the patient can be rendered sugar-free by means of regular insulin given every four to six hours. The amounts of insulin given should be determined by the physician on the basis of urine tests for sugar done every four to six hours. Most men feel that a patient should be sugar-free preoperatively, although small amounts of sugar need cause no harm. In the presence of large amounts of sugar in the urine, however, the operation, if possible, should be postponed until improvement in the diabetic condition occurs after proper treatment. This should not delay operation for more than 24 to 48 hours. If a diabetic loaded with sugar is operated upon immediately, the anesthetic plus the operative shock may be sufficient to push that patient into acidosis and coma.

Before operation, one-fourth to one-third the daily dose of insulin should be given using regular insulin immediately preoperatively. After operation the emergency schedule should be followed with intravenous 5% glucose by continuous drip, 3,000 ccm. to 4,000 ccm. daily as necessary. The urine should be tested every three hours immediately after operation for the first 24 hours and regular insulin given as necessary in the intravenous solution and supplemented if necessary by additional insulin by hypodermic syringe. As the patient improves and is able to take fluids by mouth, milk and fruit juices are given according to schedule every six hours, i.e., 400 gms. milk or 300 gms. orange juice are given every six hours. Regular insulin is also given every six hours according to the urine test.

When the patient is ready for solid food, a soft diet high in carbohydrate is given in three regular meals with insulin before each meal according to urine tests for sugar. Finally the diet is brought back to normal and the noon-day dose of insulin is combined and given with the morning dose of insulin. If it is desired to use protamine-zinc insulin next the transition is accomplished in the same way as would be done with the ordinary uncomplicated diabetic, i.e., the whole daily dose of insulin as protamine-zinc insulin is given every morning starting on any given day when the patient's condition is suitable. However, on the first day of protamine-zinc insulin, two-thirds the daily dose of regular insulin is given and on the second day one-third the daily dose of regular insulin is given in addition to the whole daily dose of protamine-zinc insulin by separate injections. Thereafter protamine-zinc insulin may be used alone.

Occasionally and more so recently, patients who have been maintained on protamine-zinc insulin require operation. These are best changed over to regular insulin before operation to avoid difficulties unless the physician has had sufficient experience to handle such situations and can switch them to regular insulin postoperatively.

Frequently acute emergency operations such as appendectomies are required in the diabetic. If the patient is in acidosis or has a heavy glycosuria operation should be postponed, if possible, for a few hours until the acidosis and glycosuria are reduced by means of the emergency schedule type of treatment. Regular insulin should be given every two or three hours in as large doses as may be dared in an effort to delay as little as possible the time for operation. This should not delay operation for longer than from four to eighteen hours. The risk of operation, especially in acidosis, is greater than the risk of waiting as a rule. The situation must be carefully weighed and a decision made accordingly but seldom does it occur that the dangers of a few hours delay outweigh the dangers attendant upon operation in the presence of acidosis.

As one can easily understand from the foregoing discussion, moderate or severe diabetes complicated by severe medical or surgical conditions presents a serious time-consuming problem. If the physician intends to care for the diabetes he must be prepared to be always within telephone call for several days. Diabetes under such conditions is not a disease that can be controlled from day to day by daily visits. It requires almost hourly contact and constant vigil for acidosis and coma may strike with lightning-like rapidity as many practitioners know. This constant contact with the patient is often burdensome to the physician but he will be amply rewarded. Under such control he will find that his mortality and morbidity rates will be no greater in the diabetic than in the nondiabetic. Good treatment will eliminate the opinion, that seems widespread, of the diabetic being a poor risk medically and surgically. Reliable statistics show that the average diabetic under good control is as good a risk as the average patient and often better due to the more careful care given to them.

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CANCER—A DEFICIENCY DISEASE?

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The infrequency of cancer among native races, living under primitive conditions, has been repeatedly observed. However, when these same natives adopt white men's dietary and mode of life there is a definite increase in the incidence of cancer.

Eskimos — Accurate data as to the causes of death of the Eskimos are not as yet available. Nevertheless, physicians and travelers among the primitive Eskimos have not reported a case of cancer, so, if cancer exists at all, it must be exceedingly rare. Greist[1], for 16 years director of the hospital at Point Barrow, Alaska, and in contact with the Eskimos along a thousand miles of Arctic coast, states that he has not seen a case of external or internal cancer among them. Stefansson[2] reports that he did not know of a case of cancer among the Eskimos living under primitive conditions. Leavitt[3], who visited the western Arctic from 1890 to 1907, and was on a sharp look-out for cancer, never saw a superficial lesion. Inquiries by him about breast cancer revealed that the condition seemed unknown

to the Eskimos of Cape Parry on the east to the mouth of the Yukon on the west, as well as to the Eskimos of northeastern Siberia. Garber[4] reports that cancer and many diseases in the category of the white men's bodily ailments are unknown to the Eskimos living in their primitive way. Bulkley[5], who sojourned about 12 years among many different tribes of Alaskan natives, was unable to discover a true case of carcinoma among the full-bloods and very few among those of mixed blood.

All observers agree that the diet of the Eskimos consists of fish and other sea foods, with some cereals, berries, and vegetables. They consume, raw or cooked, the entire fish or animal, with the possible exception of the eyes. The viscera and the head of the fish are looked upon as especial delicacies.

American Indians — Malignant disease among the North American Indians during the prereservation period appears to have been extremely rare, though the semicivilized or civilized Indians are not free of it. After an extended inquiry among the Indians of southwestern United States and northern Mexico, Hrdlicka[6] remarks that malignant disease must be rare. He heard of "tumors" and saw several cases of fibroid variety but never a clear case of epithelioma or other cancer, nor unequivocal signs of malignant growth on an Indian bone. Hoffman[7] was unable to trace a single authentic case of malignant disease among the Indians of Bolivia. All physicians whom he interviewed on the subject were emphatically of the opinion that cancer of the breast never occurs among these Indians. Similar investigations by him among the Navajo and Zuni Indians of Arizona and New Mexico yielded identical results. He concluded that all studies in the cancer mortality of our Indian population, living under fairly primitive conditions and in little contact with the white population, prove that cancer rarely occurs among them.

The reservation or semicivilized Indians, in contrast to those under prereservation condition, are not free from cancer. The cancer rate among them was in 1921, 17.5 per 100,000; in 1922, 19.2; and in 1923, 22.5. A well-educated, keenly-observant Indian Agency-Superintendent[8], long in the Indian service, states: "Originally the Indians lived mostly on wild game and fish, with corn and dried berries, but of course, as their conditions have changed, their diet has changed with them. Like the white man they now live very largely from tin cans and paper bags. During the first years of my service, the scarcity of cancer among the Indians was a subject of comment. Now cases frequently come to my notice. It is possible that it is due to the change in their living conditions".

The meat diet of the prereservation Indian, like the Eskimo, included all the organs of the animal. The entrails, emptied of their contents, were often eaten raw.

African Negro — The incidence of cancer among primitive African natives is rare also, but increases as they give up their native ways and take on the white men's customs.

In 1906 Hearsey[9] principal medical officer of British Central Africa, reported on the rarity of cancer among the aborigines. He states that there can be little doubt that cancer as a disease affecting natives of British Central Africa is of the utmost rarity. Replies elicited by the doctors who have been in prolonged residence in the country, and in constant touch with the natives have confirmed this statement. Repeated searches by Government Medical Officers throughout the country for some time have so far resulted in the discovery of but two cases, and a third provisionally so diagnosed. No cancer of the breast has been seen or recorded by medical men of the various missions who have been in the closest touch with the natives for many years.

Renner[10], Medical Officer, Freetown, Sierra Leone, reported in 1910 on the spread of cancer among the civilized descendents of the liberated Africans or Creoles. He states that in pursuing the investigation of this subject one would first consider the case of the resident, uncivilized aborigines in the Colony and in the hinterland. From the fact that this disease is rarely seen among the hundreds of female aborigines who are treated regularly every year in the Colonial Hospital, and from the fact that the

medical officers of the protectorate districts, especially those who are stationed in large towns where there are established dispensaries at which the natives have been encouraged to attend for treatment, have in their official returns not shown the presence of new growths among their patients, one can safely assume that cancer as a disease is very rare among the aborigines.

With reference to the Creoles in the Colony proper, an examination of the records of the hospital cases, and those of medical practitioners show that within the last forty years cancer as a disease has been spreading among them.

The existence of cancer among the Creoles and the absense or rarity among the aborigines are due in his opinion to the civilizing influences among the former and to the primitive mode of living among the latter. The Creoles have adopted the European habits, food, and dress for the natural African environment.

The Gold Coast people have been in contact with the European nations for five centuries. Yet after so many centuries of close European contact they have by virtue of their race instinct and unity resisted as one people the inroads of civilization in their social life, and as a result one finds the absence or rather rarity of cancer among them.

Pittsford[11], in commenting on the incidence of cancer among the natives of Natal and Zululand, states that during the four years 1906-9 there were reported eight deaths from cancer among the whole native population (nearly one million), giving a crude death rate of about 0.21 per 100,000 per annum. During the same period the reported average annual death rate from cancer among the Asiatic Indian immigrants was 11.9 and among the Europeans 57.5.

The effect of civilization on the cancer rate of the natives, locally called Bantu, of Natal and Zululand is well shown by the statistics from Johannesburg[12]. The native population of approximately 148,000 consists of men, women, and children whose occupation is either that of a laborer or a household servant. According to the Annual Reports of the Medical Officer of Health of Johannesburg, 19,752 deaths (of which 10% were autopsied) were registered for the Bantu from 1926-1933. Of these 236 (including 73 non-resident) were due to malignant disease. This suggests that in Johannesburg malignancy among the Bantu was 15.7 per 100,000 of population.

Berman[12] states that the incidence of malignancy among the 200,000 South African natives working on the Witwatersrand Gold Mines, where autopsies are frequent and cancer information is fairly precise, was 15 per 100,000 (1925-1933).

These cancer rates among the African Negro may be compared to that of his distant "cousin", the American Negro, who has a much higher standard of living. In 1930 the United States Negro cancer rate was 60.7 per 100,000, varying from a rate of 35.1 in Arkansas to 93.6 in Kentucky.

Prentice[13], discussing the diet of the African aborigines, states that the Negroes, when they can get it, eat far more meat than the white people. There is no limit to the variety or the condition of the meat. They are only vegetarians when no meat can be obtained. Anything from a fieldmouse to an elephant is welcomed. Even the skin of a hippopotamus is cooked when other meat is scarce. Orenstein[14] states that each native employed in the Wirwatersrand Gold Mines eats 196 pounds of meat per year, 16 per cent of which is visceral organs. Natives living in the urban area of Johannesburg likewise eat considerable viscera as it is relatively cheap and the natives have a very low scale of income.

Rural and Urban Diets and Cancer — The lower cancer rate that exists among primitive as compared to civilized natives is likewise shown to a lesser degree in United States among the white population living on the farm as compared to the white city dwellers. During the past 50 years the cancer rate has increased roughly in proportion to the rate of urbanization (table I.) Today the incidence of cancer in the various sections of the United States is in proportion to the degree in which the people are city dwellers (table II).

The average weights of the various portions of beef and pork animals are : 64.5 per cent dressed carcass; 21 per cent offal products (viscera, skin and blood); and 14 per cent loss in

TABLE I.—CANCER RATE AND URBAN POPULATION IN U. S.

Year	Cancer per 100,000	Urban pop. % *
1880 (1)	29	28
1890 (2)	47	36
1900	63	40
1910	76	46
1920	83	52
1930	97	57

* "Growth of Urban Pop. in U. S. A." Bur. of Census.
(1) Whole U. S.
(2) Years 1890 to 1930 refer to Registration Area only.

TABLE II—CANCER RATE AND URBAN POPULATION OF SECTIONS OF U. S. (1930)

Section	Cancer per 100,000	Urban pop. %
New England	131.4	77
Pacific	121.7	67
Middle Atlantic	112.5	77
East No. Central	106.6	66
West No. Central	105.7	41
Mountain	76.9	39
South Atlantic	61.8	36
East So. Central	60.4	28
West So. Central	51.4	36

New Eng.: N.H., Me., Vt., Mass., R.I., Conn.
Pacific: Wash., Ore., Calif.
Middle Atlantic: N. Y., N. J., Pa.
East No. Central: O., Ind., Ill., Mich., Wis.
West No. Central: Minn., Ia., Mo., N. D., S. D., Neb., Kans.
Mountain: Mont., Ida., Wyo., Colo., N. M., Ariz., Utah, Nev.
South Atlantic: Del., Md., Va., W. Va., N. C., S. C., Ga., Fla.
East So. Central: Ky., Tenn., Ala., Miss.
West So. Central: Ark., La., Okla., Tex.

moisture. While the offal is thus 25 per cent of all available meat, a large Chicago meat-packing-company reports that the average city butcher shop, dealing mainly with white customers, sells but 2 per cent of offal meat, consisting chiefly of liver, heart, sweet bread, tongue, and brain.

A greater proportion of offal is consumed on the farm because home-butchering is mainly of hogs (and poultry), the skin and most of the viscera of which are still quite popular as food. Table III shows the proportion of the various meats in the diet of the different population groups.

COMMENT

A probable relationship of the meat diet to cancer is suggested by the experimental studies of diet on the tar cancer in mice by Maisin and Pourbaix[15]. Their work was a confirmation of

TABLE III—VISCERA-MUSCLE MEAT RATIO AND CANCER RATE

Group	Viscera	Muscle	Cancer per 100,000
Eskimos	1	3	1*
Indians (prereservation)	1	3	1*
African Negroes (primitive)	1	3	1*
African Negroes (Johannesburg)	1	5	15
U. S. Negroes	1	4-49	60
U. S. Cities* (mostly Whites)	1	49	157

*N. Y. City, Chicago, Phil., Los Ang., New Orleans, and St. Louis (1930)
*Estimated

TABLE IV—CANCER RATE ON THE 210TH DAY IN TARRED MICE*

Diet	Cancer %
Liver, dried	92.5
Liver, fat free	83.2
Brain, aq. ext., ph 7.0	79.9
Liver, ether ext.	76.0
Brain, aq. ext., ph 8.4	75.9
Duodenal mucosa	73.5
Liver, aq. ext.	73.5
Pancreas, raw	73.3
Muscle	62.0
Liver, raw	59.5
Whole wheat, vitamins	56.0
Spleen, aq. ext.	55.4
Brain, acetone ext.	51.3
Red bone marrow, ether ext.	47.2
Thymus, raw	46.1
Liver Ext., Eli Lilly & Co.	43.7
Brain, fat free	42.0
Brain, ether ext.	35.0
Red bone marrow	34.3
Lumph nodes, dried	34.1
Brain, acetone, ether ext.	25.0
Brain, raw	22.4
Brain, ether, acetone, calcium precip.	22.2
Gastric mucosa, dried	20.0
Brain, ether, acetone precip.	11.5

*Compiled from the report of Maisin and Pourbaix (15).

previous observations of Oike[16], Auler[17], Sugiura and Benedict[18], Zeitlin[19], Foulerton[20], Rosenstein and Kohler[21], Tesauro[22], and others.

Maisin and Pourbaix[15] demonstrated clearly that normal organs contain not only cancer growth-promoting factors but cancer growth-inhibiting factors as well, and that through the interaction of these the healthy organism possesses a cancer cell growth regulatory system. Both factors may be present in the same organ and the action of the whole organ is equal to the difference between the two.

In their experiments mice were painted three times a week for a period of about four months, each animal receiving 50 applications of tar. They were previously divided into lots of 30, 50, or 100 animals, each group receiving a given diet.

The basal diet consisted of a small roll (made of water and whole wheat) twice daily with the addition, twice a week, of vitamins. For the special diets the organ or extract was introduced into the rolls, usually three times a week, totaling three to seven grams for the whole organs, or the extract from 14 to 21 grams of organ, per animal per week.

Cancer of the skin appeared in some animals about the 90th day, however, in other animals of the same group it did not appear until later. The comparative results were determined by the percentage of animals in the different groups showing cancer at any given time (210th day). The relative cancer stimulating and inhibiting effect of various organs is shown in table IV. It may be observed that the addition of liver, muscle, pancreas, and duodenal mucosa hastened the appearance of cancer as compared with the diet containing whole wheat and vitamins alone; while the addition of thymus, red bone marrow, lymph nodes, brain, or gastric mucosa delayed the occurrence of cancer. The ether-acetone extract of brain was more inhibiting than whole brain itself, while the aqueous extract of brain greatly accelerated the cancer incidence.

CONCLUSIONS

1. Primitive races eating freely of visceral organs as well as muscle meat, have very little cancer.

2. Civilized white men, limiting their flesh diet practically exclusively to muscle meat, have a high cancer incidence.

3. The cancer rate of primitive races increases as visceral meat is decreased in the diet.

4. Cancer is probably a dietary deficiency disease due to absence of some constituent of certain visceral organs. From the investigations of others it appears that this constituent is most abundant in brain and stomach tissue.

5. Therefore, to prevent cancer, one might conclude that brain or stomach tissue should be added to the diet.

6. The name "Vitamin N" is tentatively suggested for the cancer inhibiting factor.

636 Church St.

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By adding a small quantity of a harmless chemical to water that must be kept in metal storage tanks, all formation of rust and corrosion is prevented; when the water is withdrawn from such tanks, it comes out just as clear as it goes in.

The chemical used for this purpose is commercially available under the trade name Aqua-Clear. In the case of old and rusty tanks, a few treatments will clean out the old rust and the water will flow clear as long as the film deposited on the tank interior by the chemical is maintained.

Use of this clear, tasteless, harmless liquid is advocated for drinking water tanks in boats, in hot-water heating systems to prevent rust and corrosion in the pipes and radiators, and in automobile cooling systems.—*Scientific American.*

TECHNIQUE OF SUGGESTION IN THE THERAPY OF ABNORMAL MENTAL STATES WITH SOME EXPERIMENTAL DATA

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"Suggestion," as Angell says, "has been more or less unintelligently used as far back as we have historical evidence."* Modern psychological research has revived the importance of suggestion and made it an instrument for the use of the medical practitioner. Suggestion, from the therapeutic point of view, may be divided in accordance with Sidis' classification into direct and indirect suggestion. Direct suggestion is illustrated by the demand "Do this!", indirect suggestion by the statement "Other people do this, and achieve very desirable results." The first statement enters the mind as a positive mandate, and although this is an extremely effective method of attack in hypnosis, the normal reaction often proves to be a negative one because of rebellion to command. The second statement enters the individual's consciousness in a more persuasive way that is calculated to arouse ideas which will reinforce it, and so the reaction is reinforced by thought rather than mere obedience to command. This type of suggestion, when skillfully employed, has proved to be of amazing value in overcoming morbid states of mind and body, and in restoring disturbed mental equilibrium to a condition of good vigor and balance.

As suggestion is capable of influencing mental as well as physical behavior, it has developed into a means of influencing the life of the individual. Many misleading theories have been based on a recognition of this fact, so it may be well to say at the outset that suggestion is nothing abnormal or exceptional. There is no form of human behavior into which suggestion does not enter. It may be observed in family life, education, law, business, politics, art, and religion. Every advertisement in the newspaper, every display in the shop windows, every intonation in the voice of a neighbor has its suggestive power; it brings its suggestive content to our minds in such a way that the inclination to do something opposite to the stimulus is weakened. The extreme of suggestion we call hypnotism.

Suggestion may arise in two ways, from without and from within. Suggestion from without always points to an object, suggestion from within, through memory and recall, arouses in the individual some familiar experience. No matter what the source of the suggestion may be, the individual assumes an attitude of expectancy, which, in turn, gives rise to a momentary activity of the mind called attention. It is the swift and uncritical response to the act that has stimulated the attention which we call suggestion.

It should be noted that in effective suggestion, the mind imbibes the stimulus uncritically. It may imbibe the stimulus wholly in case there is a properly directed motor setting.

It is well known that when attention is concentrated and directed to two different stimuli appearing nearly together or simultaneously, not merely the order of appearance, but the size and general form of perception as well is influenced. For example, in the Müller-Lyer illusion figures, Figure I, in which two horizontal lines are of equal length, the converging and diverging endlines make the horizontal lines appear to be of different lengths.

Figure I

Moreover, when our attention takes a certain direction, a condition is set up in which conscious states tend to be augmented or inhibited, according as they are favorable to the continuance of the theme of attention. When we attend expectantly to a coming stimulus, everything is favorable for its reception. If the stimulus be of a visual kind, the eyes are already fixated and accommodated; the whole muscular and nervous system is in readiness to receive the stimulus. It is correspondingly unprepared to receive any other stimulus, and it resists the development of any other presentation. Not only are the appropriate muscles of the sense organs held in preparation, but the sensory cortical

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*Angell, J. R. Chapters from Modern Psychology, Longmans Green and Co., 1915, p. 179.

centers are attuned, if not excited, because the image or thought of the coming stimulus is held in consciousness.

The chief significance of attention lies in its power to give us more and more of the attended-to material. The mind seeks to get a deeper insight and firmer hold on the object of attention; it aims toward the unfolding and fuller effectiveness of its object. The actions and the suppressing of the opposite actions, the vividness of the impressions and the inhibition of the opposite impressions, all cooperate to make the contents attended to clearer and stronger and more lasting in consciousness.

There is no mystical will influence involved in suggestion. By an easy transition the suggestion of one's follow-beings goes over into an imitation of movements in unfeeling nature. For example, if we fix our attention on the movements of a pendulum, the whole body responds to the swinging movements by faint impulses with which we repeat the motion we perceive. This power of the idea no longer depends upon its own merit or strength or value, but upon the motor setting of the mind and brain.

It is difficult to say how such suggestibility can be explained. We may suppose that somehow the channels of motor discharge become wide open. Yet it is not a mysterious reaction of will on will. We all are more suggestible in states of fatigue or emotional excitement. This simply means that our attention is given to the suggestion as a form of rest or abandonment and accepts uncritically the motor setting.

From a psychological point of view, it must be emphasized that suggestion is, in its last meaning, only a particular form of attention. Accordingly, the physician has not the slightest reason to avoid suggestion. But just because it is a powerful influence, he should use it considerately and wisely. He must never forget that any word spoken by him falls on soil prepared to an unusual degree in the suggestible mind of the sick. He must, therefore, feel conscious of the deep effect which his praise and his blame, his encouragement and his discouragement, must have.

To summarize the concept of suggestion in its sublimated form, we may say that when the motor setting is of such a nature that the individual's attention is heightened to a responsive attitude, either through the perception from without, as in the Müller-Lyer figures, or through a concept from within, as in the individual's recalling similar measures from a past experience, any antagonistic perception or concept is really prevented from entering, is suppressed at once after entrance and is relegated to the marginal consciousness. Any action which the individual begins thus crowds out the impulse to the opposed action, for the motor setting, by which the object of attention finds open channels for discharge in the action, holds back new arousals of negative character. All that suggestion means, then, is action or reaction to a recall which is commensurate with a past experience. That is to say, when one has accepted the suggested motor setting he firmly believes it to be true for the time and he is no longer open to any other form of belief or action; he remains attuned to the stimulus suggested.

In the induction test of year 14 in the Stanford revision of the Binet-Simon test, for example, a paper is folded and a piece is cut out in the middle. The individual is asked to tell how many holes there will be in the paper when it is unfolded. The paper is then unfolded and the individual is asked to count the number of holes, to verify his guess. The paper is first folded only once, then two times, etc. Each time the number of holes doubles. It frequently happens that when an individual makes a wrong guess he persists in making the same reply even when actually counting the number of holes. In the fifth folding, the individual is asked how many holes will there be now? When the reply is twelve and the paper is opened for counting, he may count twelve holes although there are actually sixteen holes there. This suggests that the response is influenced by the expected number, and illustrates the importance of a previous motor setting.

The uses of suggestion are as vast and varied as life itself, but in the treatment of disorganized personality it is perhaps the greatest agent we have when thoughtfully used. When suggestion is used for therapeutic purposes one must use it in as specific a form as one would any pharmaceutic agent. It must assume the form, "do this" or "others have done that," "that is true"

or "that is untrue," "this is possible" or "that is impossible," etc., always in a definite set time. For example, if one wishes to suggest something for immediate effect, the suggestion must assume the form, "do this" for so many seconds or minutes. If the interval is to be longer, here again one must specify the exact number of hours, days, or weeks, as the case may be. Moreover, a motor setting must accompany every suggestion. In the case where time is involved, the motor setting is the writing down on a special colored card the exact time the suggestion calls for, the card being placed in a location where the individual will get to see it often. All these features bring novel perceptions to his attention which repeat to him the suggestion by way of association and recall. Gradually but surely the suggestion becomes dominant and assumes the role of directed attention pointing to the suggestion, where the response to it becomes inevitable; that is, the individual no longer has any other version of the situation, he has succumbed to the suggestion.

When an individual is obsessed by a false belief we should not directly attack his belief, but aim to create by way of suggestion a new belief, which by virtue of its insistance and relation must crowd out the old. A case may be cited; Patient N, believed herself to be going insane. Any reference to insanity, in any shape or form, directly or indirectly, threw her into a state of extreme depression simulating melancholia. Her attention was directed to the fact that insanity manifests itself in motor acts quite different from sane acts, which she herself could discern. The direct suggestion given was that for thirty days she record daily any observations she might make on herself which led her to a growing belief that her acts were unlike those of people whom she thought sane. Her records showed her that her motor behavior did not differ from that of other people in the home, store, church, etc. It also pointed out to her that she talked logically with her acquaintances, did her work efficiently and that she was alive to the world of events. It was forcibly brought to her attention and her own records showed her actions and thoughts to be those of any sane person. She accepted the recording, which was in this instance the motor setting, and hence forth crowded out the obsession of going insane.

Another case may help to illustrate what is meant by "a motor setting" in suggestion. Patient G — a protracted case of vomiting upon taking food accompanied the later months of pregnancy. A week after delivery vomiting again set in on taking food. Repeated examinations of the ejecta and x-ray plates of barium meals reveled no unusual findings to account for the disturbance. In the absence of any organic gastrointestinal clue, it was surmised that the former repeated incident formed a habit which might account for the disturbance and that suggestion ought to be the agent of choice in the treatment.

The suggestion given was that she take two tablespoonsfull of cold water ten minutes before eating and do a specific breathing exercise. She was told to inhale deeply and slowly for ten seconds and to exhale slowly for ten seconds timing herself by a stop-watch held in her hand. This she was to repeat twelve times and the entire twelve times was to take exactly two minutes. The meal was then to be eaten and on completion, she was again to take two tablespoonsfull of cold water and the breathing exercise was to be done again in the same way as before the meal. This was to be followed for three days after each meal, when the vomiting would stop. A cue was given her by which to recognize the improvement. She was told that after the breathing exercise she would feel a warm sensation inside her abdomen. This would indicate to her that no vomiting could take place. On the third day the vomiting stopped.

Here the motor setting was the essential factor. The two tablespoonsful of water, the stop-watch, the breathing exercise, and the warm sensation in the abdomen made the suggestion impressive and kept the attention active. The new perceptions were made focal by these agencies, which kept the suggestion active before the mind for a long enough period to prevent the former habit from expressing itself. The law of the transitoriness of habit doubtless operated here and helped the successful outcome of the suggestion.

To further emphasize that within given limits, response to suggestion is the usual behavior in the presence of the proper motor setting, I am here adding the results of some of many conducted experiments on the effects of suggestion in normal individuals.

Experiment 1: A class of sixty people, made up of high school teachers, grammar grade teachers, social workers, journalists, art students, all of the better informed class generally, were taking their first course in psychology. On this occasion they were asked to give their attention especially to a test of the acuity of visual perception. TEST A. The two Müller-Lyer figures, on a card, were exposed to view three times, ten seconds each, with an interval of twenty seconds between exposures. After the third exposure the class was asked to state as accurately as they could the extent of difference in inches in the length of the two horizontal lines. Seventy-two percent saw unmistakable differences in the length of the lines, varying from one-half to three inches. Twenty-five percent asserted that they could not see the figures well enough to judge, because they were sitting at varying angles from the card.

Other figures of equal size used were the inclined plane figure; two circles in a triangle, one a circle near the apex and the other near the base; two keystones, one underneath and slightly to one side of the other, and the other similar geometrical figures. In each instance the suggestion of inequality of the figures ranging from 80% in the keystones to 64% in the circles.

The success can be attributed to the motor setting: the stop watch, the precise time of exposure and of rest, the introductory discussion of optics with a demonstration of angles of refraction and angles of incidence, a brief allusion to space perception, visual imagery and its psychophysics; all of these preliminary steps prepared them to accept the perception uncritically, and when their attention was highest they readily responded to the simple suggestion, "how much longer in inches in one line than the other?" Their own judgment was inhibited. TEST B. This was to test the acuity of olfactory perception and discrimination. It was explained that what was wanted in this particular instance was a quick response to olfactory perception in actually scenting a new odor. This they were told was not a comparison nor judgment test, but a test for the acuity of the sense of smell. Two colored mixtures, one rose color and the other pale blue were used. The rose colored liquid was water plus a dash of carmine, while the pale blue was water plus a bit of Loeffler's blue. These two liquids were put into glass bottle atomizers, wrapped around with three wrappings. These were now carefully and slowly unwrapped in view of all, mention being made of the volatility of certain aromas, and that quick recognition of odor differences was a sign of high discriminating ability, as well as a mark of keen intellect and perception. The atomizer with the rose colored liquid was now sprayed. Six whiffs were liberated, three on each side of the room which was size 40 x 50 feet with a high ceiling. No sooner was the spray out of the atomizer than hands were being raised throughout the room to signal that the new odor had been sensed. Fifty-eight percent immediately declared they perceived a delightful aromatic odor.

The windows were now thrown open ostensibly to clear the room of any vestige of the former aroma, and the blue colored liquid was then sprayed. It was decidedly interesting to see the hands fly up in the air with such enthusiastic expression, and to hear the exclamations, "what delicate fragrance!" "Such a delicious aroma!" "Such dainty color!" and many such adjectives. Sixty-one percent were entrapped this time.

Experiment 2: This was performed before a County Medical Society. The Müller-Lyer figures netted sixty percent of response to the suggestion; two other geometric figures netted forty-eight and forty-two percent respectively. The olfactory experiment claimed fewer suggestibles the reason being that the room was filled with tobacco smoke; even the sixteen percent that did respond was rather a large percent of response to the suggestion under the existing circumstances and with a trained audience. Here too the motor setting and the novel approach succeeded in wresting the attention of experienced physicians from their usual critical attitude and some of them likewise succumbed to the suggestion.

The contention that suggestions is the uncritical acceptance of a proper motor setting is warranted by the evidence here given.

SUMMARY

Suggestion, when used in a specific form, must have three characteristics to be effective: 1. there must be an appropriate motor setting, relevant to the experience of the individual, both in content and extent; 2. the suggestion

must be directed towards the formation of a new habit; 3. the individual must accept the suggestion uncritically and act upon it, and in this way it can be of marked therapeutic value in the psychoneurosis, in the obsessional states as well as in the phobias.

The limitations of suggestion are set only by the content of the individual's life and by his experience and the suggestion must never over reach the individual's intellectual capacity.

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CONCEPTS OF CORONARY DISEASE

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During the past decade few problems have been studied more intensively than disease of the coronary arteries. Most of the important developments in electrocardiography have dealt with coronary disease. Correlation of graphic, clinical and necropsy findings have demonstrated the definite value of the method in the study of this group of patients. Recognition of these facts are responsible for the recent widespread interest in electrocardiography.

A physiologic approach to the study of coronary disease has developed.[1-4] Should even a momentary discrepancy between the metabolic supply and demand of the myocardium develop coronary insufficiency is said to exist. The coronary insufficiency may be caused by factors which increase the metabolic requirements of the myocardium or may be due to factors which lead to a decreased coronary bloodflow or to both. This inadequacy may be relative rather than absolute, i.e., a coronary circulation, sufficient under ordinary circumstances, may become relatively insufficient as the result of a sudden increase in the work of the heart.

Exertion, excitement, emotion, food, cold, tobacco, adrenalin, etc., are factors frequently responsible for the increased load on the heart. Rapid or irregular heart action, due to its inefficiency, may initiate coronary failure. Likewise, cardiac hypertrophy may be responsible since there is no associated increase in the number of coronary capillaries and each must supply an area of muscle larger than normal.[5-8] Other factors which increase the work of the heart are obesity, hypertension, hyperthyroidism, infection and valvular disease.

The most common cause for decreased coronary flow is arteriosclerosis. If the process develops slowly and the collateral circulation is adequate little or no coronary insufficiency is manifest despite the coronary obstruction.

An *incipient* coronary insufficiency is recognized. Symptoms and signs may be definite or indefinite. Associated graphic changes may be indefinite or they may constitute the sole evidence of coronary disease.

A *transitory* form of coronary insufficiency occurs when the collateral circulation enables the heart to meet only the ordinary demands but not the increased needs associated with any of the above provocative factors. Here, the coronary flow, ordinarily sufficient, becomes periodically inadequate and cardiac pain commonly develops. This type is usually recognized as *angina pectoris;* rarely, as paroxysmal dyspnea or acute pulmonary edema. Attacks are of abrupt onset and of brief duration. Graphic changes are absent or minor and fleeting.[9] In addition to the above factors, rapid aerial ascension, flight at high altitude, hemorrhage, shock, asphyxia, anoxemia, sudden change in posture, as well as movements, postures, dreams, and vasomotor changes during sleep, may provoke attacks.[4]

Chronic coronary insufficiency may develop; the subjective, objective and graphic evidences of which persist. It may be a later development of an incipient or a supposedly transitory stage of the disease. It may represent a failure of the heart to completely compensate following coronary closure. Likewise, it may be the result of hypertension, diabetes, obesity, or other disease which predisposes to arteriosclerosis. A *benign* type, at any stage of development when first seen, may appear stationary or only slowly progressive when observed over a long period. In this *non-progressive* form, as in benign hypertension, the prognosis is good. The *malignant* form is due either to rapidly progressive cor-

onary disease or to the inadequate development of a compensatory circulation. The *progressive* nature of the process is evidenced by increase in the severity of symptoms and findings on repeated examination and in serial curves. This represents a most serious form of coronary failure. Unless the disease can be checked or the collateral circulation increased heart failure and death are inevitable.[4] Management of the patient and readjustment of his activities must be carefully planned over a long period.

Coronary failure results with further increase in the demands on the heart or under conditions which further reduce its available blood supply. It is characterized by cardiac pain, more prolonged than that of angina, but without clinical, graphic or necropsy evidence of acute myocardial infarction. Since in such instances, after a brief interval, infarction may occur, these patients should be treated conservatively. Coronary failure is usually associated with one of the above precipitating factors which increase the work of the heart or decrease the coronary flow. A *temporary* form may be due to pulmonary embolism, cor pulmonale, pericarditis, dissecting aneurysm, trauma, acute hemorrhage, operation and shock. Other causes are hypertensive crisis, aortic stenosis, heart block, heart failure, acute abdominal conditions, post-operative complications and infections. Predisposing factors are coronary sclerosis, arterial hypertension, aortic stenosis or insufficiency and heart enlargement and failure. Occasionally the cause is obscure. Rarely, an *acute* form occurs without detectable pathologic basis; death usually being due to cardiac standstill or ventricular fibrillation.[10]

When a definite disproportion between the demands on the heart and its blood supply develops and persists prolonged pain occurs, the involved portion of the myocardium becomes necrotic, as evidenced by fever, leukocytosis and increased sedimentation rate, and the electrocardiagram is changed.[2] Although the exact pathologic mechanism of occlusion, i.e., atherosclerosis, subintimal hemorrhage or edema, thrombosis, ulceration or rupture of atheromatous plaques or embolism can not be determined by clinical means, it is recognized that the most common mechanism of complete coronary occlusion is intimal hemorrhage into a sclerotic plaque or hemorrhage into the vessel wall with secondary thrombus formation at the site of intimal injury.[11–21] Occlusion is a better term than thrombosis.[3] It represents a definite clinical and graphic entity. It is firmly established by usage.

Discrepancies between clinical findings and pathologic observations are frequent. The diagnosis of coronary occlusion is often made without such being found. Myocardial infarction may occur without a concomitant fresh occlusion, and contrariwise, occlusion of a major coronary artery may occur without causing acute myocardial infarction. Conversely, fresh infarction or complete occlusion of a main coronary artery may be found without corresponding clinical phenomena. No constant relationship exists between clinical signs, the degree of coronary closure and the occurrence of angina, coronary failure or myocardial infarction.[1, 2, 22–25]

While the coronaries were formerly considered end arteries,[26] it is now generally recognized that fine communications exist between the main coronary branches, even in normal hearts.[2] An anastomatic circulation develops when and where it is needed. Should a coronary artery become narrowed these collateral vessels develop and counteract the diminished bloodflow to that area of the myocardium. Whereas the fine interarterial pathways of the normal heart do not prevent infarction following sudden coronary closure, since here an anastomotic circulation never exists, nevertheless, vessels of larger size, in abnormal hearts, are important factors in obviating the effects of coronary sclerosis and occlusion. With rapid formation of a coronary thrombus, where time for the establishment of an adequate collateral circulation is insufficient, infarction occurs and death may result. Although other communications exist, those between coronary arteries appear to be the more significant in maintaining capillary flow.

The apparent inconsistency of completely occluded or markedly narrowed coronary arteries without clinical signs or significant graphic or pathologic evidence of myocardial damage is explained by the demonstration of an adequate collateral circulation; either as a "by-pass," the collaterals communicating between portions of the same artery proximal and distal to the site of occlusion or the distal portion of the artery may derive its blood supply from distant ves-

sels.[1] Here the process of sclerosis and occlusion progresses so slowly that obstruction to blood flow is compensated by the opening of these collateral channels. Although compatible with comfort and longevity the margin of safety or "coronary reserve" is reduced and with a fresh occlusion, or sudden increase in its load, such a heart may unexpectedly become insufficient. Even with these safeguards, infarction may occur if the time is insufficient for the development of adequate anastomotic vessels. At times the occlusion responsible for myocardial infarction may be found at a distance from the infarct, in a vessel serving as a source for the collateral circulation supplying the infarcted area. This has been termed "infarction at a distance." Finally, the terminal episode of acute myocardial infarction may not be induced by a fresh occlusion but by other factors resulting in increased demands on a heart with an impaired coronary circulation.[27]

Whereas a general relationship exists between the occurrence of coronary sclerosis and the incidence of angina and occlusion other modifying factors, as the site of the occlusion, the vessel involved,[28] the adequacy of the collateral circulation, the rate of development of the occlusion or narrowings, the influence of spasm[29] or reflex changes[30, 31] and the effects of emotion[32] are also important.

The physiologic approach emphasizes the fact that necropsy findings can not determine coronary failure. The effect of increased strain on the heart or of inadequate blood supply may not be manifest at this time. The coronary insufficiency may have been of functional type; the coronary arteries being found normal or even widened rather than narrowed. The status of the sensory nerves and collateral circulation are variables particularly difficult to evaluate in estimating the functional capacity of the heart. However, from a clinical point of view it is important to determine the adequacy of the coronary circulation for the patient's ordinary activities and, should it be insufficient, to obtain rest, to decrease the demands on the heart, to permit sufficient time for the development of a more adequate circulation and for healing if infarction has occurred. The proper diagnosis must be made and the condition, be it angina, coronary failure or occlusion, differentiated from the many other conditions which may simulate it.

The frequent discrepancies in clinical, graphic and necropsy findings are to be expected. Until injection methods for visualization of the coronary system become routine, necropsy observations will remain inadequate.[33]

That premature coronary disease is being neglected has not been sufficiently emphasized. The public should be educated regarding better health habits, mental hygiene and the value of moderate exercise and sufficient rest. The early detection of obesity, hypertension and diabetes, as well as latent coronary disease would aid materially. Significant manifestations of incipient disease of the coronary arteries are undue fatigue, lack of endurance, nervous irritability, palpitation, insomnia, belching, epigastric distress or a feeling of fulness and discomfort after meals. Grossly irregular, intermittent or slow pulse may occur. Shortness of breath on exertion, paroxysmal dyspnea or angina of effort may be recalled. These are evidence of early coronary disease; angina pectoris and coronary occlusion with infarction occur later, while heart failure finally develops as the end result. During this latent period electrocardiography serves as an invaluable check on the clinical examination. It may reveal a large Q_3, flattened S-T intervals and/or T waves, prolonged P-R interval, dropped beats, intraventricular block, bundle-branch block or even a complete heart block. It is a definite aid in establishing the diagnosis of coronary disease at a time when proper management and suitable environmental adjustment may be of greatest benefit to the patient.

Angina pectoris is a transitory attack of substernal pain, of characteristic radiation, caused by some precipitating factor and due to a temporary focal myocardial ischemia but without persistent pathologic myocardial change. The pain may last a few seconds or minutes, rarely more than an hour. It may vary from a vague sensation of substernal pressure to that of an agonizing constriction, or choking sensation. It may radiate to the left or right arm or to the neck. Shock is usually absent. Change in heart sounds, arrhythmias, a drop in blood pressure, and signs of heart failure, are absent. Electrocardiographic changes are absent or transitory. Whereas S-T interval depression may

occur, S-T elevation or T-wave inversion is rarely observed.

Coronary failure may closely resemble occlusion. If it is sufficiently prolonged so that focal myocardial ischemia exists for more than 20 minutes infarction invariably results. Pain is less severe. If prolonged it strongly suggests occlusion. Duration of an attack, however, is not of dependable differential significance. Shock is inconspicuous or absent. Feeble heart tones, fall in blood pressure, gallop rhythm and arrhythmias are less common. Nausea and vomiting are infrequent. Fever, leukocytosis and increased sedimentation rate, as evidence of tissue necrosis, are absent, as are the characteristic progressive electrocardiographic changes associated with infarction. Although S-T interval depression may occur in any or all leads, S-T elevation or T-wave inversion are exceptional. Abnormalities are usually maximal in the initial record and do not progress. They return to normal with disappearance of the precipitating factor. The diagnosis of coronary insufficiency should be made only in the presence of a precipitating factor, when S-T interval depressions only exist and after serial curves have established the absence of the characteristic progressive changes associated with occlusion. Whenever the clinical picture is doubtful the condition should be considered occlusion until proven otherwise. Although angina pectoris and coronary failure simulate coronary occlusion clinically, they are entirely different. Angina and coronary failure have the same physiologic basis in reversible myocardial ischemia of shorter or longer duration. Coronary occlusion, on the other hand, based as it is on irreversible myocardial ischemia, refers to an entirely different pathologic event, i.e., myocardial infarction.

If graphic changes persist coronary occlusion rather than angina or coronary failure must be considered. Whereas the typical picture of coronary occlusion should be readily recognized, painless occlusions and those of atypical onset are frequently overlooked. The pain of occlusion is usually more severe and prolonged than that of angina. Radiation may include the interscapular area, the throat and the epigastrium. The pain is little influenced by activity and may occur during rest or sleep. Nausea with vomiting, rare in angina, is common in occlusion and may be aggravated by morphine. Although no factor immediately responsible for the attack may be apparent, a history of recent effort or excitement is not uncommon. The blood pressure, although it may be temporarily increased during the attack, invariably falls following occlusion. In the presence of arterial hypertension this fall in blood pressure may be delayed. Frequently repeated blood pressure determinations is an important diagnostic aid at the command of every physician. Shock, rare in angina, is common in occlusion. Nitroglycerin should not be used. It lowers blood pressure, it increases the work of the heart, it increases the tendency to shock and is dangerous A cardinal sign of coronary occlusion is feeble heart tones, particularly a distant first tone at the apex; the second sound being louder than the first. The younger the patient the more significant the finding.

A presystolic gallop rhythm due to an accentuated auricular sound is common. It is of considerable diagnostic importance. A pericardial rub may develop but is usually evanescent and is heard in less than ten per cent of cases in routine practice. With adequate care the majority (90%) survive the first attack. Typically, the electrocardiogram reveals progressive changes, consisting of S-T interval elevations which eventuate in T-wave inversions. With anterior apical infarction these changes are present in Leads I and IV; with posterior basal infarction they appear in Leads II and III. The reciprocal relationship of the S-T interval and T waves in Leads I and III is usually evident and may be of assistance in diagnosis. The occurrence and persistence of a deep Q_1 is occasionally of assistance. The return of the electrocardiogram toward normal may begin about the fourth week, to become stationary in three to twelve months; the return to normal being complete in less than ten per cent of patients. Whereas we may emphasize the specificity of the above typical electrocardiographic picture, since its presence indicates occlusion, conversely absence thereof does not eliminate the possibility of such an occurrence. The sudden onset of auricular fibrillation or flutter, ventricular tachycardia or heart block or a low voltage curve, may be the significant early finding. The characteristic progressive changes may be slow in their development or may be obscured by the above arrhythmias; by intraventricular block of bundle-branch type; by the presence of changes commonly associated

with an arterial hypertension or by the presence of abnormalities due to a previous coronary occlusion.

In angina, coronary failure and occlusion, the underlying mechanism seems to be a relative disproportion between the demands of the heart for blood and the supply of blood through the coronary arteries. The resultant myocardial change depends solely on the extent and duration of the ischemia. If of brief duration, as in angina, no permanent myocardial damage results. Even with more prolonged attacks, as in coronary failure, if the increased demands of the heart are quickly reduced, no structural change occurs. With the prolonged ischemia of coronary occlusion irreversible changes give clinical and graphic evidence of tissue destruction, recognized pathologically as myocardial infarction. More frequently than is commonly recognized a severe anginal attack, or an attack of coronary failure cannot be differentiated clinically from coronary occlusion, such differentiation being possible only with the aid of serial electrocardiograms.

SUMMARY

Coronary disease is discussed from a physiologic point of view. Coronary insufficiency may be due to factors which increase the work of the heart or which lead to a decrease in the coronary circulation or both. Exertion, excitement, emotion, food, cold, tobacco, adrenalin, hemorrhage, shock, asphyxia and movements, postures, dreams and vasomotor changes during sleep are most commonly responsible for an increase in the load of the heart. The most common cause for decreased coronary flow is arteriosclerosis. An *incipient* coronary insufficiency is recognized. A *transitory* form is usually recognized as angina pectoris; rarely as paroxysmal dyspnea or acute pulmonary edema. *Chronic* coronary insufficiency of a *benign*, non-progressive type or of a *malignant*, progressive nature may develop. *Coronary failure* results with further increase in the demands on the heart or with further reduction of its available blood supply. A *temporary* form may result from pulmonary embolism, cor pulmonale, pericarditis, dissecting aneurysm, trauma, hypertensive crisis, aortic stenosis, heart block, heart failure, acute abdominal conditions, post-operative complications and infections. Rarely, it is seen in an *acute* form, without detectable pathologic basis; death usually being due to ventricular fibrillation or cardiac standstill. Although angina pectoris and coronary failure have the same physiologic basis in reversible myocardial ischemia of shorter or longer duration, coronary occlusion, on the other hand, based as it is on irreversible myocardial ischemia, refers to an entirely different pathologic event, i.e., myocardial infarction.

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MYCOSIS FUNGOIDES

Report of a case with autopsy findings

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The status of mycosis fungoides as a clinical and pathological entity has been questioned in recent years. A number of authors are of the opinion that there is a close relationship between the various lymphoblastomas and that mycosis fungoides may terminate as a lymphosarcoma, Hodgkin's disease, or as a leukemia.[1] There are also some, who consider mycosis fungoides as clinical and pathological non-existent.[2]

We had recently the opportunity to study a case of mycosis fungoides during a period of seven years. This case came to autopsy and we believe that the histologic findings of the skin, lymph nodes, and viscera are of sufficient interest to warrant their publication.

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CASE REPORT

S. G. aged 51, Jewish man, mattress maker, was first seen on June 10, 1933, and was under continued observation and treatment until his death on November 23, 1940. When first seen, the disease was of 18 months' duration. The disease began as a patch of lichenoid, scaly, infiltrated dermatitis on the outer aspect of the right leg. In the course of 18 months and in spite of therapy the entire cutaneous surface of the body became involved. The eruption was intensely pruritic and consisted of a marked edema of the face, hands and feet, keratoderma of the palms and soles, generalized exfoliative dermatitis, marked lichenification of the skin, and of palpable inguinal and epitrochlear adenopathy. The lymph nodes felt hard and their size varied from a hazelnut to that of a walnut. The spleen was not enlarged.

On October 18, 1934, he was admitted to the Mt. Sinai Hospital. During his stay in the hospital, he had a number of attacks of chills and a fever curve that fluctuated from 100 F. to 103 F. simulating the Pel-Ebstein fever curve. Itching was intense and the lesions that appeared were urticarial and nodular, irregular or circinate, edematous and evanescent in nature. They had a tendency to disappear in the course of from 48 to 72 hours. On the scalp and on the dorsa of the feet, numerous erosions and ulcerations were present. These healed without secondary infections. Physical examination did not disclose any pertinent findings except two abscessed teeth. Laboratory examination excluded parasites in the stools. Blood Wassermann and Kahn were negative, blood sugar, urea nitrogen, creatinine, uric acid were within normal limits. Blood cultures were negative, malaria parasites were not found. Numerous blood counts were made during his hospital admission. These invariably showed a high eosinophilia, except during the terminal phase of the disease, when eosinophilia was absent.

The red blood count varied from 4,370,000 and 82 per cent hemoglobin in 1934 to 2,640,000 and 60 per cent hemoglobin in 1940. The red blood count, how-

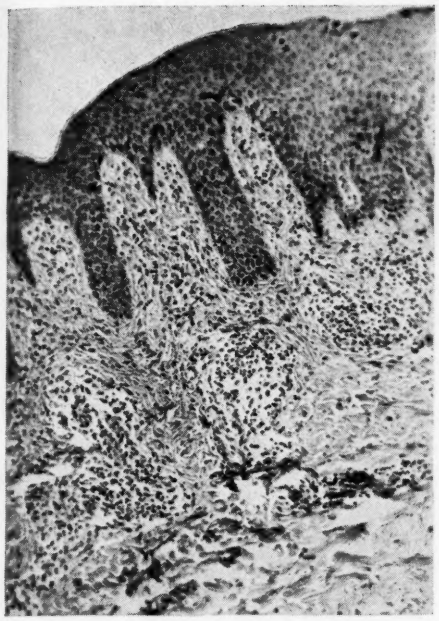

Figure 1. Biopsy of skin, illustrating the premycotic infiltrate in the corium and the marked acanthosis. (x 125).

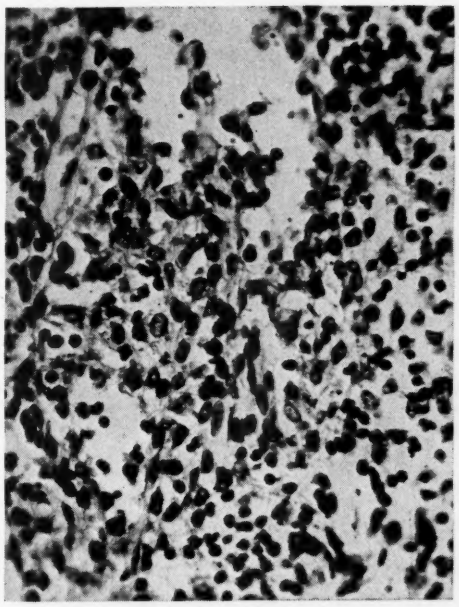

Figure 2. Biopsy of lymph node, illustrating polymorphism of infiltrate and the proliferation of endothelial cells. (x 450).

ever, was always kept up by means of periodic small transfusions (10 in a period of 6 years) and by the administration of iron, arsenic, and a high caloric diet.

At no time in the course of the disease did fungoid lesions appear. This we believe to be due to frequent Roentgen irradiation courses which he received. In October, 1936, he received a course of fever therapy by means of Triple Typhoid Vaccine. This greatly alleviated his itching and from 1936 to 1939 he had a remission during which time he pursued his occupation as a mattress maker.

On October 29, 1934, a piece of skin and an inguinal lymph node were removed for a biopsy. The histologic findings at that time were as follows (Dr. I. Davidsohn):

Skin (Figure 1): Sections show a stratified and hornifying squamous cell epithelium. The corium shows massive accumulations of a great variety of cells among which lymphocytes, neutrophilic and eosinophilic leucocytes are well represented while plasma cells are conspicuous by their absence. The lymphocytes are also in the minority. Many mononuclear endothelial cells are seen, some of them seeming rather irregular in appearance. A small number of dark, large mononuclear cells are present and occasional small multinucleated cells with clumped compact nuclei. The infiltration is limited almost entirely to the corium. Specimen of inguinal lymph node (Figure 2): Section shows in many areas complete destruction of the normal architecture, which is replaced by a variety of cells such as lymphocytes, leucocytes, plasma cells, and a very large number of proliferating endothelial cells. Very few multinucleated cells are seen. They are small in size. Eosinophilic leucocytes are very pronounced, as well as deposits of blood pigment. Lymph follicles are present, though very small in number and in size. The germinal centers are indistinct and exhausted.

Diagnosis: The above findings in the skin and in the lymph nodes are compatible with the diagnosis of mycosis fungoides. Biopsies of skin and lymph nodes taken in 1936 did not show any essential changes from those of 1934.

The patient died November 23, 1940, of a terminal broncho-pneumonia.

Autopsy report: (Autopsy performed by Dr. I. Davidsohn):

The patient was a well developed, poorly nourished, white male, 56 years of age. The skin of the trunk and of the extremities presented a deep brown discoloration, desquamation and marked atrophy. It was dry and in places there were present white areas of depigmentation alternating with darker areas. The scalp was covered in places with black hair. Many hairless areas were present, in which the skin appeared moderately thickened. Eyebrows and eyelashes were sparse. The eyelids showed infiltration. The chin was covered with long bushy black hair, but only in

Figure 3. Skin lesion at the time of autopsy: compact infiltrations of corium. (x 125).

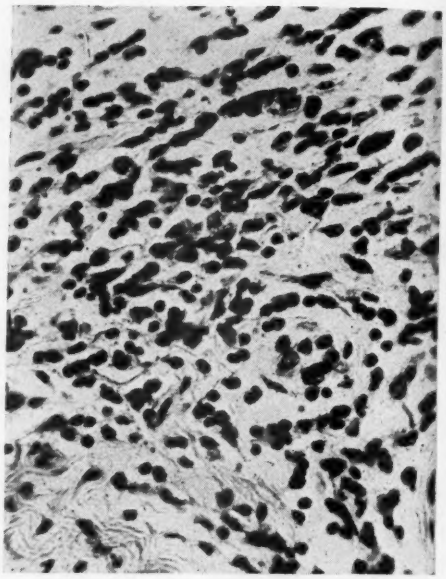

Figure 4. Skin lesion at the time of autopsy, same as Fig. 3, illustrating polymorphous infiltrate, clumping of nuclei and pyknosis. High power magnification (x 450).

spots. The heart showed a thrombo-endocarditis of the tricuspid valve, which was interpreted as a terminal lesion in a marantic patient. In addition it showed brown atrophy, an old healed epicarditis and multiple subepicardial petechiae. The aorta showed slight arteriosclerotic changes. The lungs showed chronic emphysema, chronic purulent bronchitis, bronchiectasis and pneumonic foci in both lower lobes. The spleen was markedly enlarged, weighing 1120 grams. The consistency of the organ was decreased. From the purplish-red section surface a great deal of pulp was scraped off easily. Grossly, no nodes or any evidence of infiltration could be noted. Similarly enlarged was the liver, weighing 2200 grams. Its section surface showed the normal structure replaced by a brown and in places yellowish-brown tissue. The kidneys showed evidence of an acute hemorrhagic glomerulonephritis. The lymph nodes of the axillary and inguinal regions appeared enlarged and presented on section surface reddish-brown and grey and white areas. The brain showed petechial hemorrhages in various regions. All the other organs showed either no abnormalities or only minor changes of no importance for the present discussion.

Bacteriological findings: Non-hemolytic streptococci were found in the heart blood culture obtained at the autopsy and in smears and cultures from the lesions of the tricuspid valve.

Microscopic findings: Sections of different portions of the skin show similar changes with only minor variations (Figures 3 and 4). The subpapillary layer shows dense infiltrations of a polymorphous character with pyknosis and clumping of the nuclei, with occasional multinucleated cells and plasma cells and very few eosinophilic leucocytes. These accumulations are not continuous everywhere. In some places they are absent. The collagen fibers in the papillary and subpapillary layers and within the accumulations are hyalinized and homogeneous. In the deeper layers only very small numbers of cells are seen. In sections taken from the legs hair follicles and sebaceous glands are entirely absent, while the sweat glands are numerous and without abnormalities. These sections also show small granules of a brown pigment most of it in the tissue between the cells. Sections from the thorax show similar infiltrations, but less numerous; however, there is a greater amount of brown pigment, most of it within cells. The skin in the region of the abdomen shows large numbers of plasma cells. Sections from the scalp contain many atrophic hair follicles. In these sections large deposits of a melanotic pigment are seen in the basal layer of the epidermis and within the melanophores in the cutis. The muscles throughout the body show various degrees of atrophy. The lymph nodes (Figure 5) show indistinct lymph follicles and decreased cellularity. The predominant cell is the plasma cell with some eosinophilic leucocytes. In the spleen (Figure 6) the lymph follicles are decreased in number and small in size. The pulp contains large numbers of plasma cells, eosinophilic leucocytes and quite a number of neutrophilic leucocytes. Throughout the sections many foci of dense infiltrations are seen resembling those in the skin and presenting a polymorphous character. Many deposits of blood pigment are seen. The reticulum

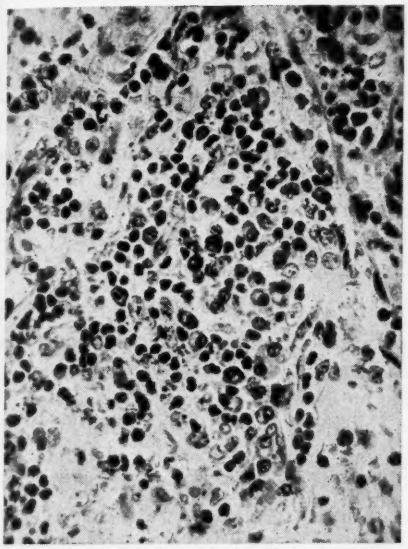

Figure 5. Lymph node at the time of autopsy. Many plasma cells. (x 450).

is moderately thickened. No fibrosis could be encountered anywhere. In the liver (Figure 7) the capillaries are distended with blood. The Kupffer star cells are prominent. A few small accumulations of lymphocytes, plasma cells and occasional large mononuclear or multinucleated cells are seen. There is some atrophy of the liver cells due to chronic passive congestion. The microscopic findings in the kidneys confirm the gross diagnosis of an acute hemorrhagic glomerulonephritis to which the patient finally succumbed.

COMMENT

The following changes are considered to be the outstanding characteristics of mycosis fungoides[3]: a dense cellular, polymorphous infiltrate usually limited to the upper portion of the corium. The cells are of different type; lymphocytes, plasma cells, endothelial cells, and even some multinucleated giant cells may be present. Multinucleated giant cells, however, are very few according to Ormsby[4] and seen more often in early lesions. Montgomery[3] lists in addition to the above findings pyknosis, karyorrhexis and tendency of the nuclei toward clumping. In general, these changes have been found in the sections prepared from the skin. They are present in the sections from the biopsy which were made seven years prior to the patient's death. (Figure 1).

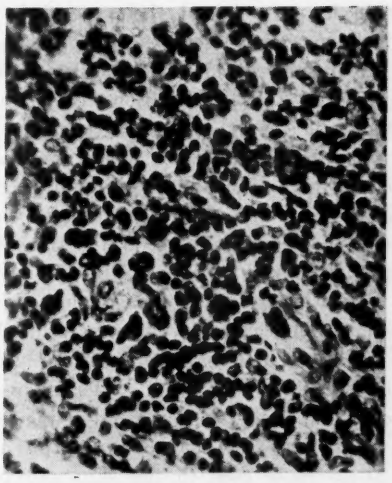

Figure 6. Spleen: polymorphous type of infiltrate, clumping of cells, pyknosis. (x 450).

The sections of the skin examined at the time of the autopsy (Figures 3 and 4) present a similar polymorphous character with nuclear clumping and pyknosis. The infiltrations, however, when compared with those seen in the biopsy, are of much greater compactness. The eosinophilic leucocytes and the clumped multinucleated giant cells are decreased in number.

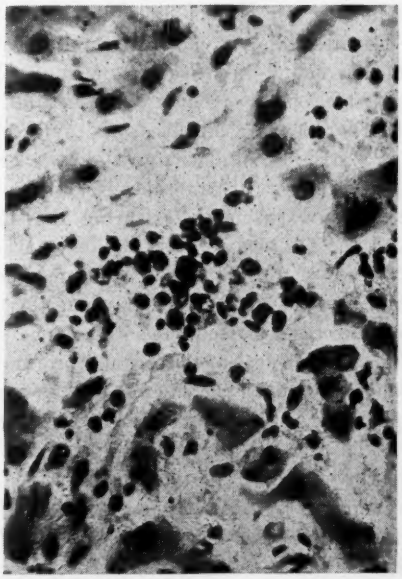

Figure 7. Liver: slight polymorphism of infiltration. (x 450).

This shows that after 7 years of involvement the skin lesions retained their specifity. The inguinal lymph node removed early in the disease presents increased proliferation of the endothelial cells and infiltrations consisting of lymphocytes, leucocytes, plasma cells, and some multinucleated giant cells. These are changes similar to those found in the skin and therefore characteristic of an early specific involvement. The lymph nodes examined at the time of the autopsy present a somewhat different picture. The marked proliferation of the endothelial cells is absent. The cellularity is decreased. Plasma cells are the predominant cells with only occasional eosinophilic leucocytes. This difference is probably due to the long duration of the inflammatory process. The changes in the spleen were similar to those seen in the skin and in the lymph nodes. The liver presented only scanty accumulations of lymphocytes, plasma cells, and occasional large cells with irregularly shaped nuclei. These accumulations though small can be considered as a visceral manifestation.

Which histological features differentiate mycosis fungoides from other diseases of the lymphoblastoma group? Hodgkin's disease, as commonly agreed, is not a disease of the skin, but of the lymphoid tissue. It is characterized by a polymorphous type of infiltrate with Sternberg-Reed cells which are usually present and very characteristic for the disease. They show certain features different from the multinucleated giant cells found in mycosis fungoides. Here the main lesions are seen in the skin, and if the internal organs are involved, the infiltrations are of a striking similarity to the skin lesions. The involvement of internal organs has not been reported frequently. During the discussion of the findings Dr. Davidsohn emphasized the absence of fibrosis and the moderate degree of proliferation of the reticulum in this case. In advance cases of Hodgkin's disease one usually finds a great deal of fibrosis and proliferation of the reticulum. The microscopic findings in lymphosarcoma are of an entirely different nature. There is greater uniformity of the cells which are mostly of the mononuclear type with many mitotic figures. There is no mixed infiltration with different types of cells and multinucleated giant cells are absent. It also is primarily a disease of the lymph nodes, while the skin lesions are secondary. In leukemin cutis one finds either dense infiltrations with lymphocytes or with myeloid cells.

Clinically mycosis fungoides presents a premycotic and a tumor stage. The factor of X-ray and arsenic therapy undoubtedly played a role in the marked melanosis and in the absence of tumor formation. Considering all of the above mentioned opinions and especially the histologic findings, we feel that a diagnosis of mycosis fungoides in this case is justified.

The statement of several authors that mycosis fungoides may in some instances change into another form of a lymphoblastoma cannot be denied by the presentation of a single case. Difficulties in diagnosis seem to be possible in the very early stage, when the cellular infiltrate is still indistinct, especially when giant cells are present. In such instances an exact diagnosis may be arrived at only after prolonged observation and study, both clinical and pathological.

CONCLUSIONS

1. A case of mycosis fungoides observed for a period of seven years presented at autopsy lesions in the skin, lymph nodes, and in some viscera.
2. These lesions were thought to be of specific nature.
3. Mycosis fungoides in the prefungoid and tumor stages can usually be diagnosed by its cellular structure.
4. We agree with Ormsby that the preponderance of clinical and histologic evidence is in favor of the continued recognition of mycosis fungoides as a disease sui generis.

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Clinicopathologic Conferences

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PRESENTATION OF CASES BY
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CASE 1 — PATENT DUCTUS BOTALLI WITH VEGETATIVE ENDOCARDITIS AND PREGNANCY

The patient is a 30 year old white female, who was told, at the age of 6 years, that a congenital heart disease was found and who has attended the cardiac clinic at Cook County Hospital for many years until November, 1940. After her third baby 6½ years ago, she developed a choking sensation with palpitation. Her physician told her to stay in bed and not to have any more children. 1½ years later, however, she had another baby; after this labor she became tired easily and heart conscious, although she has never been decompensated.

She was apparently well until September, 1941, when one afternoon she was suddenly seized with headache and dizziness, and was confined to bed. This attack lasted for 2 weeks, during which time she had alternating attacks of chills and fever. She also had night sweats, and brought up a bright red sputum which lasted for two weeks and stopped four days before admission.

The patient entered Cook County Hospital on October 4, 1941, as a pale, blonde-haired female, B.P. 118/60. Pupils were round and equal and reacted to light and accommodation. Teeth contained many fillings. Heart was enlarged to the left, sinus rhythm; rate was 120. There was a presystolic and systolic blow at the apex which was transmitted to the axilla, and a harsh, machine-like (boiler works) murmur at the base. There was decreased resonance and a few rales over the right apex posteriorly. Breasts were atrophic with small petechiae over the right one. The spleen was palpable two fingers below the left costal margin. Genitals and adnexa were normal. The diagnosis made was congenital heart disease — possibly patent ductus arteriosus — with superimposed rheumatic heart disease and with possible subacute bacterial endocarditis. During the six months of the patient's stay in the hospital, she ran a low grade fever, up to 101° F., alternating with short afebrile periods. However, she continually complained of pain over the right back posteriorly and expectorated bloody sputum. At times she ran a high septic fever, and was treated with sulfathiazole, sulfadiazine, or sulfapyridine. Her pain, however, was never relieved completely. Finally she began to complain of severe pain in the right kidney region, the left shoulder, and both ankles. X-rays of the chest suggested pulmonary infarcts, a mitral configuration of the heart, and pericardial pleuritis. Five blood cultures showed staphylococcus albus; three showed streptococcus viridans. On entrance, the hemoglobin was 67% with 3,60 R.B.C. and 7,100 W.B.C. In spite of several blood transfusions, her hemoglobin went down before she expired to 32%; 1,730,000 R.B.C. and 5,150 W.B.C. Wassermann was negative. Kahn was twice doubtful and once positive. Repeated sputum examinations for tubercle bacilli were all negative. An electrocardiogram showed slight myocardial dam-

age. Total protein and the albumin globulin ratio were within normal limits. She became progressively weaker and extremely pale, and finally expired, about six months after admission.

The body is that of a well developed and moderately well nourished, white female. The pubic and axillary hair is well developed and blonde. The skin is pale, and there is no pitting edema. There are whitish striae over the lower abdomen and both inguinal regions. Both pupils are equally dilated and round. The conjunctivae, oral mucosa, finger and toe nails are extremely pale. Teeth are in good condition. The breasts are flat with slight pigmentation of the areolas. Over the skin of the right flank and over both arms are scattered numerous pinpoint sized, dark brown petechiae.

The midline fat is 3 mm. The abdominal cavity contains 1200 cc. of a clear, light yellow, serous fluid, and the peritoneal serosa is smooth and glistening. The left pleural cavity presents a few focal adhesions over the upper lobe, and the right contains adhesions over the posterior aspect of all the lobes. The left pleural cavity contains 10 cc. and the right 600 cc. of a fluid similar to that found in the peritoneal cavity. The pericardial sac is markedly dilated and contains 200 cc. of a slightly turbid, brownish-red, hemorrhagic exudate. The pericardial sac is covered by thin, fibrinous precipitations. The circular sinus which is formed by the circular reflection of the pericardium around the large vessels, contains numerous abscess cavities, walled off by firm, fibrous adhesions and filled with a thick, yellow, creamy pus.

The heart is markedly enlarged by dilatation and hypertrophy of both ventricles, and represents a moderate cor bovinum. On opening the pulmonary artery, which, at the level of the leaflets, has a circumference of 80 mm., an opening can be seen in the posterior wall 50 mm. above the leaflets, which is 25 mm. in diameter and leads into the aorta. Beneath this anastomosis with the aorta, on the right and left sides, originates a branch, each of 20 mm. in diameter, which splits into two branches and enters the hilum of the right and left lungs, respectively. These two branches represent the normal ramification of the pulmonary artery.

The communication between the pulmonary artery and aorta, which is a persistent ductus Botalli, is not a real vessel, but a fibrotic ring only, and of much smaller diameter than the pulmonary artery or aorta. On the pulmonary side of the communication, the wall of the pulmonary artery, on its anterior aspect, is covered with soft, pink-gray vegetations, some of which have a diameter of 15 mm. and extend downward up to 12 mm. above the upper margin of the pulmonary leaflets. The posterior wall with the two openings of the right and left pulmonary arteries, is free from vegetations, and is smooth and white.

The leaflets of the aorta are slightly thickened and shortened. The free margin is occupied by pinpoint sized, verrucous, gray vegetations. Similarly, the mitral valve presents a slight thickening and shortening, with a few soft, verrucous vegetations on the auricular aspect of the free margin. There is a moderate thickening and shortening of the tendinous cords of this valve.

The tricuspid valve shows no pathological changes. The pericardial, as well as the tracheobronchial lymph nodes, are slightly enlarged, gray and edematous.

The lungs are darker than normal by passive congestion. The left upper lobe contains a firm, brownish, hemorrhagic infarct, which is 30 mm. at the surface, and 22 mm. deep. A similar, smaller infarct, the size of a hazel nut, is found at the base of the right lower lobe.

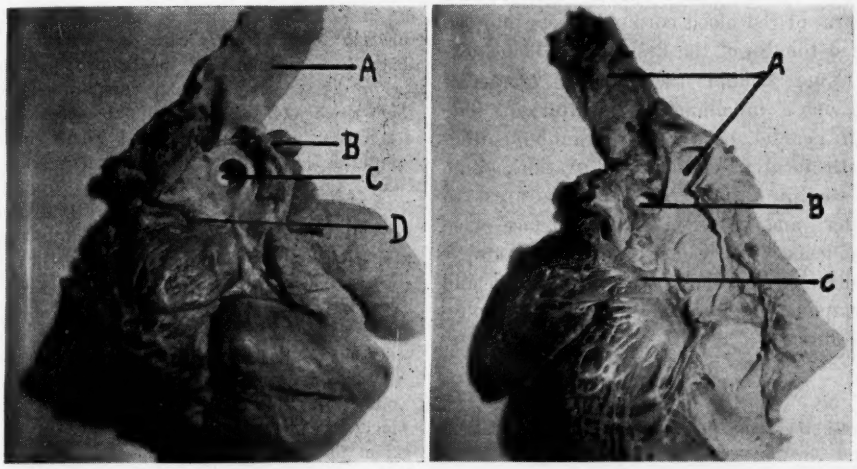
One of the ramifications of the pulmonary artery leading to the right lower lobe, is blocked by a recent embolus, but no infarct has as yet developed.

The spleen weighs 700 gms., and is markedly enlarged. The capsule is thick, gray and wrinkled. On transverse cut, the pulp is pale purple-brown with indistinct markings and extremely soft. On the lateral margin there is a small, 12 mm. white, firm infarct.

The liver weighs 2050 gms. and is very firm. It has a thin, smooth capsule, and the sectioned surface has distinct markings of a typical nutmeg liver.

The gall bladder contains 10 cc. of a thick, dark brown bile, and an 18 mm. long, black, soft, spindle-shaped bile stone, broken into two parts.

Kidneys weigh 425 gms. together. They are slightly enlarged and of soft consistency.



a. b.

Figure 1
a. Heart opened and viewed from the front.
A. Ascending aorta opened from the front.
B. Endocarditic vegetations of the pulmonary artery.
C. Ductus Botalli.
D. Leaflets of the pulmonary valve.
b. The heart seen from the rear.
A. Ascending aorta — the lower part opened from the rear; the upper part opened from the front (the photo shows the outside).
B. Ductus Botalli.
C. Leaflets of the aorta.

The capsule strips with ease and leaves a smooth, white surface, studded with pinpoint sized, red spots (so-called "flea-bite"). On transverse cut, the markings are distinct and the color of the cortex and pyramids is very pale.

Uterus is of normal size and has a small, smooth cervix without any lacerations. The endometrium is thin, white and has a smooth surface.

Both ovaries are of normal size and have a white, fibrotic surface with several deep folds. On section: both present several corpora albicans, but neither contains a fresh or old corpus luteum.

The brain has a normal external configuration with transparent leptomeninges. The meninges and brain substance appear pale and anemic.

MICROSCOPIC

The pericardium all over is covered with a thick coat of fibrin infiltrated by numerous leucocytes. The lower strata are well vascularized by numerous capillaries and organization by invading fibroblasts has begun. The pulmonary infarct shows one large area of complete necrosis; whereas, in other ones, pyknotic nuclei still can be seen. Cross sections of the small arteries, shows laminated, white and red thrombi which have not yet become organized from the intima. This proves that embolization and thrombosis of the arteries are of recent date. The alternating areas of more and of less progressed necrosis in the infarct, give evidence that it is composed of several smaller, overlapping infarcts of different ages. The rest of the lung tissue shows alveoli with red or white blood corpuscles in the lumen and a few typical heart failure cells.

The liver has a very distinct acinar structures, and presents dilated central veins and sinusoids with compression necrosis of the liver cell trabeculae. The peripheral part of the acini is composed of liver cell trabeculae with progressive fatty degeneration.

Many glomeruli of the kidneys still are normal, but the majority shows pathological changes which are characterized by increase of the nuclei of the capillary tufts, proliferation of Bowman's epithelium and accumulation of numerous leucocytes in Bowman's space. These changes proceed to marked thickening of the capsule and partial to complete hyalinization of the tufts. Some glomeruli are distinct by acute or subacute

hemorrhages in Bowman's space, which extend in the form of red blood corpuscle casts into the convoluted tubules of the first order. The interstitial tissue around the affected glomeruli presents dense inflammatory infiltration. The tubuli, in general, have a high granular epithelium with focal basal fatty infiltration; some tubules contain casts, which are hyalinized in the center, and covered on the surface with pyknotic leucocytes. Cultures made at autopsy from spleen, pericordial abscess, pericardial and hilar lymph nodes, yielded hemolyzing staphylococcus aureus.

DISCUSSION

This case represents a rare congenital anomaly of the heart, superimposed on which is a severe acute endocarditis. A statistic published by Kirshbaum and Pearlman, shows that in 11,575 consecutive autopsies performed at the Cook County Hospital in the course of nine years, only 90 cases of congenital heart disease were found. Twenty of these cases occurred in patients over 21 years of age, and among these twenty, only one case had a patent ductus Botalli.

The clinical significance of congenital heart failure depends on the extent of the functional impairment. The functional impairment due to abnormalities, which represent an arrest of development, depends in general on the phase when the development of the heart was arrested. It means, the earlier the arrest took place, the less a normal extrauterine function of the circulatory system can be expected. The final changes of the circulatory system of a new born from the intrauterine placental respiration to the extrauterine pulmonary respiration is accomplished only after birth by the obliteration of the foramen ovale, the ductus arteriosus, etc. In respect of these facts, the patent ductus Botalli is not a congenital abnormality, since every normal child is born with a patent ductus Botalli. The arrest of the closure of the foramen ovale is not very rare and in some statistics, the percentage of adult individuals with patent foramen ovale, amounts up to 25%. Although in most of these cases the opening is very small, just enough to let a needle pass, and is protected by an overlapping fold, even in the cases in which the opening is much larger, the function of the heart is not impaired. Sometimes, as an incidental finding at an autopsy, an opening is discovered through which can pass the small finger. The reason even a defect of such a size is not interfering with the normal circulation, lies in the fact that the pressure in both atria is almost equal, so that in spite of the defect, no blood is shifted from one atrium to the other; at least, not in quantities of functional importance. The same holds true for a small minority of cases with a much earlier arrest, i.e., with a defect in the intraventricular septum. Sometimes, in autopsies, cases are found in which the septal defect had not produced any signs or symptoms during life. The danger in the intraventricular septum defect lies not in a fatal impairment of the cardiac function, but the mild dysfunction creates a sensitization of the lungs for pneumonia or tuberculosis. Such patients die by the superimposed lung complications. Some of them reach advanced age without ever having shown a picture of cardiac involvement. This combination of septum defect with superimposed pneumonia or tuberculosis, has been described by the French author Roger, and is known in literature as "Maladie de Roger". A similar mechanism refers to our case. The abnormality by itself evidently did not interfere with normal circulation, because the patient could not have passed four normal pregnancies if her cardiac function had not been an almost normal one. The strain on the heart during a pregnancy is an enormous one, and from time to time we encounter pregnant women with mild mitral or rarer aortic deformities which for years have been compensated to such an extent that they were not conscious at all of having had any cardiac pathology. But they get pregnant and when the pregnancy progresses, sometimes in the 4th or 5th month, they get decompensated to an extent that the obstetrician feels obliged to induce an artificial abortion to sacrifice the baby in order to save the life of the mother. In our case, the function of the heart was evidently so perfect, that the heart could stand even the stress of a pregnancy four times. This can be explained only by the assumption that the hydrodynamic pressure on the inferior wall of the arch of the aorta is not much different from the pressure at the superior part of the wall of the pulmonary artery above its ramification, and, consequently, no considerable quantity is shifted from one vessel to the other. This fact plays a great deciding roll in the physiological obliteration of the ductus after birth. Experiments have demonstrated that no vessel obliterates as long as a considerable current of fluid is flowing through its lumen. The weak spot in our case was the creation of an area of stagnation in the upper part of the pulmonary artery between the openings of its right and left branch and the ductus. Such a stagnation leads to degeneration of the endothelium, and favors precipitation of blood and infection of the clots. The mechanism of the endocarditis in this case was a different one than in bacterial valvular endocarditis. The well known fact that the vegetations of the aortic leaflets, in general, develop at the inferior or ventricular aspect, and in the mitral valve on the superior or auricular aspect, is explained by the theory that they develop at the lines of contact where, by contact, germs, if present in the circulating blood, are forced into the endothelium. In our case, the mechanism must have been a different one, for in the areas where the vegetations developed there was no contact at all. Evidently the clotting was provoked by the stagnation, similar to the mechanism of the mural thrombi in the auricular appendages, and stagnating blood or clots, while forming, offered a very favorable breeding place for germs, in this

case staphylococci, which temporarily may have entered the general circulation from some focus of infection.

As long as the patent ductus was not complicated by any endocarditis, it produced as little cardiac signs and symptoms as those in Roger's disease. But the complicating endocarditis decided the fate of the patient, just as the complicating pneumonia or tuberculosis in Roger's disease.

One more conclusion the case allows to draw, is that a local vegetative endocarditis is not definitely bound to remnants of a rheumatic process, although this sequence is very common. There was no evidence of any rheumatic process in the wall of the pulmonary artery, where the severe endocarditis started.

The hemorrhagic glomerulitis evidently is a sequela of the septicemia. Since the latter was caused by hemolytic staphylococci, and acute, and rather severe, hemorrhagic glomerulitis developed, entirely different from the slow Löhlein's type which accompanies the endocarditis as far as it is caused by streptococcus viridans.

CASE 2 — ABORTION DUE TO VEGETATIVE ENDOCARDITIS

Patient, a colored female of 19 years (entered the Cook County Hospital on April 29, 1942 with the examining room diagnosis of pyelitis of pregnancy. Her last menstrual period was in November, 1941. Three months ago she began having sharp, shooting pains in her finger tips, which persisted, and during this period she also had chills and fever lasting from 5 to 15 minutes, and followed by sweats. For several months she had suffered from dyspnea and swelling of the ankles. There was a history of "heart trouble" since the age of 7 years. She complained also of an intermittent dull, aching pain across the lower back, with frequency of five to six times daily, and nocturia two to three times. Patient has had three full term pregnancies.

Examination disclosed patient to be a thin and emaciated colored female, with temp. of 102, respirations of 28 and blood pressure of 116/72. There were two small petechiae in the lower left conjunctiva. Heart was 3 cm. outside of midclavicular line, with regular rhythm. There was a harsh systolic murmer over the precordium, with greatest intensity over the pulmonic area. The lungs were clear. Uterus was 2 fingers below the umbilicus, and there was a positive Murphy punch on left. Liver was 2 fingers below the costal margin. Spleen was questionably palpable. Petechiae were found beneath the finger nails on the right hand.

The Wassermann and urine tests were negative. Blood culture taken during a chill revealed streptococcus viridans. X-ray examinations disclosed the heart to be enlarged, with prominent pulmonic conus, suggestive of multi-valvular lesions. Lung fields were found to be negative. Blood examinations from time to time showed the red blood count to vary from 2,730,000 to 3,970,000, and the white blood count from 7800 to 12,550. Blood protein was 750; albumin 4.30; globulin 3.20; icteric index 7; N P N 27; uric acid 2.5 and chlorides 500.

After this examination, the impression was a subacute bacterial endocarditis and a pyelitis of pregnancy, after 5 months of pregnancy.

Patient continued to have chills and fever and developed new areas of petechiae. The spleen became enlarged and tender, sepsis continued and patient developed rales in her chest. A heart rate of 240 and regular rhythm, indicated auricular flutter. Quindine lowered the rate to 100 but patient expired — twenty-one days after admission to the hospital.

The body is that of a well developed and fairly well nourished, slim, colored female with no pitting edema. The abdomen, which is at the level of the chest, shows depigmented striae over both lower quadrants. From the vaginal entroitus, project a few lumps of light, fresh, soft, placental tissue. The breasts are well developed. The mucosa of the mouth and lips is pale, and so are the finger and toe nails. The pale conjunctivae are spotted by a few pinpoint sized, fresh petechiae.

On opening the abdominal cavity, the intestinal serosa is smooth and glistening, and the peritoneal cavity is free. The uterus is a little larger than a man's fist, well contracted, and its fundus reaches the navel. The pleural cavities, with the exception of a few focal adhesions at the base of the left lung, are free. The pericardial sac contains 20 cc. of a clear, yellow, serous fluid.

The heart weighs 440 gms. Both ventricles are hypertrophied and dilated, the left more than the right. The left atrium presents, on opening, a white, fibrotically thickened endocardium. The mitral valve is markedly shrunken. The thickened free margins are covered by soft, gray

vegetations, and the tendinous cords are markedly shortened and thickened. Adjacent to the insertion of the lateral cusp of the mitral valve, an oval plaque, 20 x 30 mm. extends over the lateral aspect of the wall of the left atrium, covered by firmly adherent, soft, light pink-gray, fibrinous vegetations. The lateral cusp of the mitral valve shows in the center a shrinkage so extensive that the free margin is drawn close to the wall. From it, the gray, soft vegetations extend over some tendinous cords. The aortic valve shows a slight thickening of the leaflets with pinpoint sized, hemorrhagic vegetations over the nodules. The tricuspid and pulmonary valves are normal. Both auricular appendages are free. The coronaries have a normally thin wall and a smooth intima.

The lungs are unchanged, with the exception of a moderate terminal edema.

The liver weighs 1650 gms., is moderately firm and has a thin, translucent capsule. On section: it is light gray-pink with indistinct markings. The spleen weighs 185 gms. and is adherent to the diaphragm, corresponding to a large, hemorrhagic infarct which occupies the entire upper third of the organ. The mucosa of the small intestine is gray-tan, with high folds. In the ileum, gray spots appear, which, in the lower part, coincide with Peyer's patches (intestinal melanosis).

The kidneys weigh 300 gms., and have a slightly decreased consistency. The capsule, which strips with ease, leaves a smooth, pinkish-white surface, mottled with numerous, slightly retracted, yellow areas, which represent anemic infarcts. They are surrounded by a dark purple halo and demarcated from the adjacent tissue by deep retracting folds. The mucosa of the pelvis, which is slightly dilated, is smooth and white. Both ureters are slightly dilated and convoluted, corresponding to midterm pregnancy. The urinary bladder contains 200 cc. of a slightly turbid, dark yellow urine. The mucosa is pale and smooth. The tubes are normal in size and length, and both are patent. The right ovary contains a corpus luteum the size of a hazelnut, and of a yellow color. On transverse cut, it presents a pinhead sized cavity. The vagina is distended and dilated by an intact fetus, 15 x 9½ cm., which lies in its amniotic sac. The latter has a well developed placenta on its lower pole, and is torn only where it projects in the vesti-

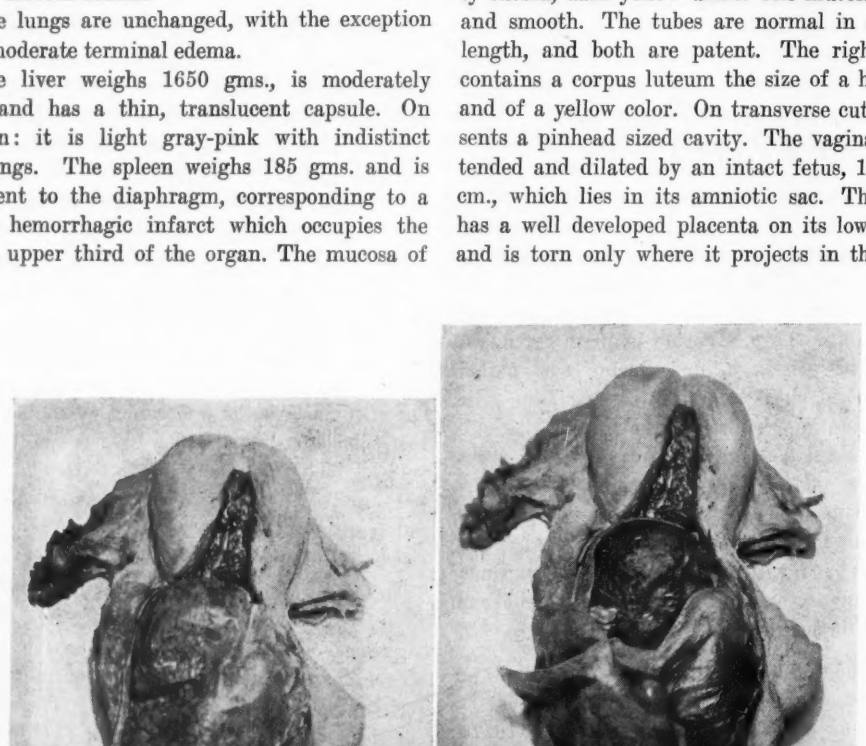


Figure 2 a. b.
Uterus and vagina opened from the front.
a. The amniotic sac intact.
b. The amniotic sac opened and the fetus visualized.
Photos by courtesy of: Dr. Milton E. Kurth, Chicago

bule. Due to almost complete contraction, the uterine and cervical cavities are narrow.

Whereas a blood culture, a few days before the exodus, yielded streptococcus viridans, the cultures of the spleen at autopsy were entirely negative.

Microscopic Findings. In many areas, the alveoli of the lungs are filled with thin, pale staining protimic exudate, which contains a few leucocytes. Some heart failure cells in the lumen of the alveoli, give evidence of moderate chronic passive congestion of the lungs. The infarct of the spleen shows complete necrosis of the pulp, whereas the follicles are still represented by well staining lymphocytes. In the liver, the central areas of the acini are necrotic by passive congestion. In some areas, the necrotic tissue already shows a beginning leucocytic infiltration. The infarcts in the kidney present progressive necrosis. The occluded arteries are blocked by densely packed leucocytes which, in some arteries extend over the necrotic wall. The balance of the kidney shows no pathological changes, except for pale staining protein in Bowman's space.

The septa of the myocardium are partially enlarged by edema and by necrosis of some adjacent muscle fibers. Such septa are loose and contain many thin-walled vessels and capillaries. The stroma at the borderline zone is moderately infiltrated with lymphocytes and histocytes. Slides of the vegetations show precipitated fibrin, dotted with extensive blue clouds of partially necrotic small cocci.

In all slides, the red blood corpuscles in the blood vessels have assumed a spindle, or crescent-like shape, representing a typical case of sickle cell disease.

DISCUSSION

In certain lines, this case is similar to the previous one. Again, we find that the rather progressive rheumatic fibroplastic deformity, which the patient acquired during childhood, caused trouble only in the acute phase. Later on, the patient had no signs or symptoms, not even when the strain of a pregnancy was added to the burdened function of the heart. Only when a bacterial infection caused an acute vegetative endocarditis on the old fibroplastic deformities of the valves, the patient succumbed without even reaching to full term, as the patient in the first case. In the short time between puberty at 12 and death at 19 years, she passed three normal, full-term pregnancies with living children, and died when the fourth was half completed. A case like this shows the fallacies and difficulties of the obstetrical prognosis in chronic heart failures.

If, before her first pregnancy, she would have asked an obstetrician whether she should take the risk of pregnancy, in view of her affected heart, a negative answer would have been wrong, since she had passed three pregnancies without any bad consequences and had three living children. But, an affirmative answer, encouraging her to get pregnant, would have failed to take into consideration the risk of a complicating superimposed acute bacterial endocarditis, which killed her in the course of her fourth pregnancy.

The role of the sickle cell disease was not too important. Many cases of sickle cell disease — this expression is to be preferred to "anemia" since many patients are not anemic — are blamed for the fatal complication in a delivery. Patients of sickle cell anemia die in a shock-like attack and the histological examination of the internal organs, particularly of the liver, confirm this clinical similarity by presenting the liver sinusoids almost blocked by the conglomerated, sickled red blood corpuscles. This histological finding was absent in our case, and the endocarditis yields sufficient explanation for the fatal complication of pregnancy, as well as it may fully account for the moderate anemia. However, the constitutional sickle cell disease may have contributed by weakening the resistance of the patient towards the infection.

Abortion en bloc — this French term means expulsion of the fetus inside of the amniotic sac — is rather frequent in the first three months of pregnancy, and becomes rarer with the progress of pregnancy. In general, during the 5th month, as in our case, the fetus is expelled first, followed by the placenta and not, as in this case, by premature separation of the placenta, within the membranes in toto.

CASE 3.—FOREIGN BODY (NEEDLE) IN THE PORTAL VEIN

The patient was a well developed, well nourished, white male, 56 years of age, and by occupation a burner in the steel mills. He was fairly well most of his life, except for a vague abdominal pain which was present for about twenty years. He would abstain from fatty or fried foods, since they would aggravate this pain.

On January 18, 1942, he suddenly developed a high fever, and one day later, became slightly jaundiced. He was nauseated but did not vomit, and had chills every day. On January 23, 1942, he went to a hospital where he remained for 11 days. During this period, he continued to have fever. He decided not to eat anything then, because it made him "sick." While in the hospital, he asked his physician to operate his hernia, but this was refused because the patient was too ill.

He returned home and stayed there for two weeks, during which time he felt fairly well. On the 17th of February, 1942, he entered the hospital and was operated for a left inguinal herniorraphy. He made an uneventful recovery and returned home on March 2, 1942. He was fairly well until 3 weeks later, when he again developed a fever, and became jaundiced. A physician was called, who said the patient had a fever of 101° F. On the next day, 3-26-42, the wife noticed blood in his urine, which has recurred several times since. His fever continued for several days, he complained of abdominal pain and became delirious.

The patient now enters Cook County Hospital *on 3-28-42, in a stuporous condition, his skin is* hot and dry, and he responded only to painful stimuli. Temperature is 104.6; Pulse 128; Respirations 32; Blood pressure 168/112. The pupils were round and equal, but reacted poorly to light. Tongue was dry. There was slight dullness on percussion with roughened and bronchial breath sounds over the right lower lobe posteriorly, and few moist rales at the right base. The heart was essentially normal, except for a severe tachycardia. Over the abdomen was a recent, left, inguinal herniorraphy scar. The liver was palpable one finger below the right costal margin, firm, and not especially tender. The spleen was palpable four fingers below the left costal margin. Genitalia were normal. On rectal examination, there was a canary yellow feces on examining finger.

On admission, his icterus index was 11; there was no blood in the stools; Kahn was negative and urine showed a trace of albumin. Hemoglobin was 41%; R.B.C. 2.40; W.B.C. 15,800 with 90% neutrophils and a few toxic forms. The non-protein nitrogen was 27 mgm/100 cc. of blood; creatinine 1.4 mgm. and uric acid 2.9 mgm. A chest plate was negative. A diagnosis of cirrhosis of the liver with secondary splenomegaly was made, and to rule out G-I malignancy. Patient became moribund and further adequate examination was impossible. Two days after admission a spinal tap showed the fluid under increased pressure; Pandy ++++; of a yellowish color; 550 cells/mm, mostly polys. He also developed a rigid neck, and expired on 4-2-42, five days after admission.

The body is that of a well developed, white male, with dark brown hair and brown eyes. The skin over the entire body is yellowish, and both conjunctivae are pale gray-tan with a yellowish tinge, and are slightly injected and edematous. In the left inguinal region is an ancient surgical scar, 12 cm. long. On the right side of the scrotum is a 3 mm. lesion with a light yellow, muco-purulent material draining from it. The peritoneal cavity contains 200 cc. of a clear, serous fluid. The fundus of the gall bladder is attached to the transverse colon and also to the duodenum by fibrous adhesions. The peritoneal serosa is smooth and shiny. The left pleural cavity is free; the right presents a few focal, stringy adhesions over the apex of the upper lobe. The pericardial sac contains a few cc. of a clear, watery, serous fluid. The anterior portions of both lobes of the left lung are feathery and crepitant. The posterior portions are deep purplish-red with focal areas of dark purple-brown, granular consolidation. The same changes are found in the three lobes of the right lung; the anterior portions are free and feathery. The posterior portion is involved by confluent, hemorrhagic bronchopneumonia. The mucosa of the bronchi is deep purplish-red, due to inflammatory hyperemia and covered by a frothy, blood-tinged, muco-purulent material.

The heart weighs 345 gms. The myocardium is light purplish-tan, very soft and flabby. The intima of the aorta shows a few slightly elevated plaques of fatty degeneration.

The liver weighs 1700 gms. and is very soft. The capsule is thin and smooth. On the inferior surface, near the quadrate lobe, is a slightly projecting, soft, fluctuant area, which upon pressure exudes a small amount of light yellow pus, through a pinpoint sized opening in the capsule. On section, the liver is purple-tan-brown with deep purple-red, acinar centers, and light yellow peripheral acinar markings. Numerous abscesses, measuring from 2 mm. to 10 mm. in diameter, are scattered throughout the entire liver. Near the quadrate lobe, is a confluent area of abscesses measuring 5 cm. in diameter. Most of the larger branches of the portal vein, particularly near the hilum, have markedly thickened walls, and the intima is shaggy and discolored purplish-red to a dirty brown. They are filled with a thick, tenacious, yellow-tan, muco-purulent fluid. The porto-

hepatis is markedly thickened and firm, and there are two small, well walled off abscesses up to 3 mm. in diameter.

The wall of the portal vein is markedly thickened to 3 mm., where it enters the liver, and is filled with a tenacious, yellow-tan, muco-purulent material. In this thick pus lies freely a slightly rusted, straight, black needle with one pointed end and the other end with a small eye. All the bile ducts are free, and upon pressure over the gall bladder, bile oozes freely from the papilla.

The gastro-epiploic vein contains muco-purulent, thick fluid; the pancreatico-duodenal vein, near the head of the pancreas, before it joins with the gastro-epiploic vein to empty into the splenic vein, is occluded by a large thrombus of 3 cm. in length. Gall bladder and pancreas are normal. Small and large intestines present a uniform, pale tan and slightly edematous mucosa. Kidneys are soft and weigh 390 gms. together. On section, the capsule strips with ease, leaving a purplish-tan, smooth surface which has a cooked appearance. The pelvic organs present no pathological changes.

Microscopic. Microscopically, the liver shows a progressive, chronic thickening of the interacinar septa, and marked enlargement of the periportal fields. There is a moderate, chronic, inflammatory infiltration of the septa and the fields by lymphocytes. In the central part of the acini, the central vein and the adjacent sinusoids are slightly dilated and stuffed with R.B.C. in consequence of passive congestion. In a few areas, the congestion has resulted in a compression necrosis of the central ends of the liver cell trabeculae, and to the establishing of small fields of hemorrhagic necrosis. Scattered all over the parenchyma are small abscess cavities, some of which extend only over parts of acini; the larger ones involving and destroying many acini. The abscess cavities contain leucocytes, and only in the border line zone, remnants of liver tissue are still visible. Particularly in the larger abscesses, a demarcation zone is formed by a fibrous granulation tissue. In some areas, this process has already resulted in the formation of a scarry pyogenetic membrane.

The pathology of the liver has to be classified as moderate beginning periportal cirrhosis with central passive congestion, overlapped by multiple pylephlebitic abscesses.

The spleen and intestines present moderate passive hyperemia. Gastric mucosa is slightly hypertrophic. In the kidney, the glomeruli and vascular walls are normal. The cells of the tubuli are slightly enlarged by hydropic degeneration. The prostate presents moderate benign glandular hyperplasia.

The heart muscle shows indistinct striation of the muscle cells, with mitral focal fragmentation.

DISCUSSION

When we presented this case at our weekly conference, we had to protect the surgeons against the suspicion, raised by some participants of the discussion, that the needle was left over as a remembrance of the operation of the inguinal hernia. This can be ruled out definitely. First, for the reason that the needle was a typical household needle, which no surgeon ever uses for his work, especially since the eye is far too narrow to pass a suture used for inguinal hernias. Second, the abdominal troubles of the patient, pain and fever, started several weeks before the operation was performed. Most probably the needle was swallowed by the patient with food. Dressmakers or tailors frequently are accustomed to hold needles in the mouth when both hands are engaged in work, but usually this is done with pins and not with sewing needles, and when a needle is swallowed accidentally, at such an occasion, as it unfortunately happens once in a while, it is immediately called to the patient's attention. Our patient was a "burner in a steel mill" and thus, professionally, not engaged in sewing. Two possibilities have to be considered, either he swallowed the needle with food by negligence, or the needle entered the body by trauma. When a needle enters the lumen of the intestines, the mucosa is protected to a certain extent by the muscularis mucosa, which succeeds by alternating contraction and relaxation, the needle rotates over 180°, so that when it enters the small intestine with the sharp point ahead, it reaches the large intestine with head forward, as Alfred Exner has proved many years ago in experimental work done on cats. Evidently, in this case, this mechanism did not work, and the needle perforated somewhere into the intestinal wall, and entered the mesenteric vein and reached the porto-hepatis with the blood stream. It produced no lasting changes, when entering, which could have been traced at autopsy, but caused an infection of the portal system and a pylephlebitis. From the pylephlebitis, the fatal liver abscess spread in the hepatic parenchyma, which coincidentally presents cirrhotic changes. A second hypothesis is, that the needle entered the body from

the scrotum, where it caused a small abscess on the right side, and migrated from there to the floor of the pelvis to enter the hemorrhoidal vein. The autopsy yielded no evidence for this theory, and it is not likely that a needle could enter the scrotum traumatically without calling the individual's attention to it. The gastro-intestinal route is more probable, and since the coroner found no suspicion of any one's feeding the needle to the patient with hostile intention, and also the patient was mentally normal and not an insane case of the type that swallows inedible objects, negligence in preparing the food or possibly by placing the food over the location where the needle was lying, could be blamed in this case.

SAYS FIRST AID STUDENT SHOULD REMEMBER HE IS NOT A DOCTOR

The Improper Treatment Of Disaster Victims May Result In Increased Injury Or Even In Death, Writer Advises In Hygeia

Improper treatment of disaster victims may result in increased injury or even in death, Lois Stice, Washington, D. C., warns in *Hygeia, The Health Magazine* for June, emphasing that the student of first aid should bear in mind that he is "a first aid worker and not a physician."

The civilian defense first aid course, conducted by the Medical Division of the Office of Civilian Defense, Washington, D. C., in cooperation with the American Red Cross, explains what to do for many types of wounds, Miss Stice says, but in every case the first commandment is always to call the physician.

"The first aid classes now being given," she explains, "concentrate on the injuries of war. The peacetime course has been stripped down to the essentials needed in the emergency that is now on us. . . ."

Regarding these essentials, Miss Stice says that first "you will need to know something about shock, or collapse, which occurs to some degree in all injuries. First aid measures for shock are simple, but remember—a war casualty may die if these measures are neglected! Shock following injury probably causes more deaths than the injuries themselves. . . . . Lay the person flat with his head low and feet raised. Keep him warm with blankets (both over and under him) and hot water bottles. Give him warm and sweetened drinks (unless unconscious) but no alcoholic drinks. . . .

"Internal injuries, frequent in this war of bombs, are dangerous and severe. . . . All the first aid helper can do until the doctor comes is to keep the injured one warm, prop him up if the injury is in the chest or head or keep him lying down if it is in the abdomen. . . ."

While injury to the face may seem most gruesome to the novice worker, the author points out that it is not so dangerous as are many other injuries. A person suffering from this type of wound should be turned on his face so that the blood will not run into the nose and mouth.

"What to do to control hemmorrhage is one of the vital lessons to be learned by those who are likely to be caught in a disaster," Miss Stice says. "With splintered glass flying in all directions, there may be cut arteries. You can identify arterial bleeding by the spurting of blood with each beat of the heart. . . . A tourniquet is rarely necessary. First aid instructors constantly warn that the tourniquet is dangerous unless it is loosened evey fifteen minutes.

"Fire is an important element of strategy in this war. . . . Besides fragments of exploding bombs, there are exposed electric wires, brands from burning buildings and dangerous chemicals to cause all degrees and types of burns. If the doctor is immediately available, all the first aider does is to apply a sterile dressing over the wounds without removing clothing, wrap victim in a blanket and call the doctor. . . .

"The first rule in handling fractures is expressed by orthopedic surgeons in the picturesque phrase 'Splint 'em where they lie!" Moving a person with a fracture before the bone is properly splinted may increase shock and result in death, or it may turn a simple fracture into a compound one. . . .

"A victim with a broken neck must not be allowed to move his head. Keep him lying in the position in which he was found, cover him with blankets or wraps and get a doctor. If it is imperative to move a person with a broken neck . . . he should be placed on something rigid like a door . . . and moved with extreme care by at least three persons. . . . When the back is broken the same extreme precautions must be observed. Any move that doubles the injured man forward may cause death, or paralysis for life. . . ."

SCIENTISTS URGED TO SAVE VALUABLE JOURNALS

Scientists feeling the patriotic urge to turn over to waste-paper collectors piles of old technical journals which they no longer need are urged to look them over first with an eye to their possible use in rebuilding war-damaged libraries abroad. Many such libraries have lost all or part of their files of scientific periodicals, or have been unable to keep them complete due to interruption of the mails or loss of shipments at sea.

The American Library Association has appointed a special committee which is functioning under the chairmanship of John R. Russell, librarian of the University of Rochester, N. Y. Scientists who have accumulations of old journals are requested to write to Mr. Russell, before turning them over to waste-paper drives.—*Science News Letter,* April 25, 1942.

News of the State

PERSONALS · COMING EVENTS · MARRIAGES · DEATHS

Sergeant William Wayne Chapman, 31, son of Mrs. William D. Chapman and the late Doctor William D. Chapman, former President of the Illinois State Medical Society, was killed Sunday, August 16th in an airplane accident presumably near Fort Richardson, Alaska, where he had been stationed. He enlisted in the army air corps in Denver and was assigned to March Field. He later was transferred for special training to Scott Field at Belleville, Illinois. He returned to March Field, where he remained until being assigned to duty in Alaska in February, 1941. He is believed to have experienced much actual combat service during recent action against the Japs in the northern Pacific.

Surviving Sergeant Chapman are his mother who lives in Silvis, his sister who is with the naval intelligence department in Washington, D. C. and his wife, the former Mary Gaspar of California.

Members of the Society extend their sympathy to Mrs. Chapman and the family.

Dr. Pashnpati J. Sarma, formerly associate professor of surgery at the University of Illinois College of Medicine, has been promoted to the rank of colonel in the Army while serving at Camp Barkley, Texas.

Dr. E. Mann Hartlett, 45, state medical officer of the Selective Service System in Illinois and wounded war veteran of World War I, has been promoted from Major to lieutenant-colonel of the Army of the United States, effective August 8, 1942. Colonel Hartlett enlisted in the United States Army in December, 1917 at the age of 19 years while a student at Ripon College. He was assigned to the 32nd Division and served fifteen months overseas with the 107th Engineers. He was wounded in action and later was decorated with the Order of the Purple Heart. Commissioned a first lieutenant in the medical reserve corps in 1928, Dr. Hartlett was promoted to Captain in 1932 and achieved the rank of Major in 1937. He went on active military duty as state medical officer for the Selective Service System on April 15, 1941. Colonel Hartlett is married and resides in Glenview. He specialized in eye, ear, nose and throat and maintained an office in Evanston before re-entering active military service.

L. R. Limarzi addressed the Kankakee County Medical Society at its opening fall meeting in Kankakee, September 8th.

Albert Vanderkloot of the University of Illinois College of Medicine addressed the Vermilion County Medical Society at its opening fall meeting in Danville on September 1st.

Dr. Max Thorek was presented with the Distinguished Citizens Medal by the Veterans of Foreign Wars of the United States, at a banquet at the Provident Hospital, Detroit, Michigan, on Thursday, August 6, 1942.

Aaron Arkin addressed the Effingham County Medical Society on September 8th. His subject was "The Differential Diagnosis of Organic Heart Disease."

DEATHS

MAX ASZMANN, Chester; Homeopathic Medical College of Missouri, St. Louis, 1890. Member of the Chester Board of Health for over 20 years. Died July 16, 1942 at the age of 77 years.

DANIEL FISHER BEACOM, LaHarpe; Rush Medical College, 1894. Practiced 27 years at LaHarpe. Died August 3, 1942 at the age of 81.

HOWARD B. BOONE, Chandlerville; Northwestern University Medical School, 1897. Died July 28, 1942 at the age of 69.

BERTHA E. BUSH, Chicago; Northwestern University Women's Medical College, 1889. Member of the staffs of Ravenswood, West Suburban, St. Francis and Women's and Children's Hospitals. Former professor of pathology at Northwestern University. Died July 25, 1942 at the age of 77.

PETER S. CLARK, Chicago; Hahnemann Medical College, 1899. Attending surgeon Chicago Memorial Hospital. Died July 30, 1942 at the age of 67 years.

JENNIE ANNA DUNCAN, Ottawa, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; aged 81; died, June 28, of cerebral hemorrhage.

ADOLPH W. FAULBAUM, Chicago; Washington University School of Medicine, 1903. Died July 12, 1942 at the age of 68.

JOSEPH H. GANN, Ganntown, Illinois; St. Louis University Medical Department, St. Louis, 1905. He practiced for the past 22 years in Brookport, Illinois following 15 years in Jackson County. Surgeon for the Illinois Central Railroad, active in medical organizations, holding lifetime secretaryship of Massac County Medical Society and member of the A. M. A. About 3 months prior to death, Dr. Gann received an emeritus membership certificate from the Illinois State Medical Society. Died August 6, 1942 at the age of 61 years.

DAVID H. HARRIS, Marion; Missouri Medical College, St. Louis, 1897. Had practiced in Marion since 1918. Died July 27, 1942 at the age of 73 years.

C. K. L. HAWLEY, Danville; Chicago Homeopathic Medical College, 1884. Fifty Year Club member. Died August 3, 1942 at the age of 80 years.

JOHN M. HAYES, Decatur; St. Louis University School of Medicine, 1914; called to active duty as a lieutenant colonel in the medical reserve corps of the U. S. Army Oct. 10, 1941; was awarded the British Military Cross for bravery while in service with the British Army during World War I and was a membe of the Order of the Purple Heart; aged 57; stationed at Camp Forrest, Tenn., where he died June 29th of coronary thrombosis.

SAMUEL W. HOPKINS, Walnut; University of Pennsylvania Medical School, 1895; president of the Bureau County Medical Society in 1899; was in active practice in the community for 44 years. Died suddenly of a heart attack on August 11, 1942 at the age of 76.

GUSTAV KOLISCHER, Chicago; University of Vienna, Austria, 1886; senior attending surgeon Michael Reese and Mt. Sinai Hospitals. Died August 11, 1942 at the age of 79 years.

JOHN D. MCGREGOR, Chicago; Rush Medical College, 1894; had practiced in Chicago for forty-five and served as chairman of the board of St. Anthony's Hospital; Died August 5, 1942 at the age of 72.

CHARLES H. MANNING, Chicago; Rush Medical College, 1894; had practice din Chicago for forty-five years. Died August 21, 1942 at the age of 71.

EDWARD POWERS NORCROSS, Highland Park; Northwestern University Medical School, 1904; senior member of the staff of St. Luke's and Highland Park Hospitals. Had practiced medicine in Highland Park for twenty-five years. Died of a heart attack on August 5, 1942 at the age of 64 years.

THOMAS W. PRIEST, Springfield; Northwestern University Medical School, 1903. Former city and county physician. Died July 28, 1942 at the age of 62 years.

MARIE G. SALERNO, Chicago; Chicago Medical School, 1931; staff surgeon at Mother Cabrini Hospital. Died suddenly August 22, 1942 at 35 years of age.

ELMER FRED SCHEVE, Mascoutah; Washington University School of Medicine, St. Louis, 1903. Had been practicing in Mascoutah all his life. He was a fellow of the A. M. A., a member of the Illinois State Medical Society and St. Clair County Medical Society. Served in the World War No. 1 as 1st Lieutenant in the medical corps. Died July 22, 1942 at the age of 60.

JAMES R. TWEED, Marissa; Chicago Homeopathic Medical College, 1886. Had practiced medicine in Marissa for over fifty years. Died July 26, 1942 at the age of 87.

ROY H. FREEMAN, Chicago; Loyola University School of Medicine, 1917. Served in the army medical corps in World War No. 1. Died suddenly from a heart attack on August 16, 1942 at the age of 55 years.

JOHN BELL HOWE, Hines; Chicago Homeopathic Medical College, 1895. Died August 17, 1942 at the age of 67.

EDGAR E. KIRBY, Mackinaw; College of Physicians and Surgeons, Keokuk, Iowa, 1896. Died August 17, 1942 at the age of 71 years.

The source of the great bulk of infections with tuberculosis is a human carrier with a pulmonary cavity. While the home is probably the place of most childhood and some adults contacts, many primary infections and more reinfections must occur in the place of work. Nurses, physicians and attendants on the sick encounter a real occupational hazard from infection itself and this hazard should be accepted as incidental to the professional life while hospital management should assume the obligation of minimizing opportunities for mass infection. Saranac Lake Symposium on Tuberculosis in Industry, Saranac Lake, June, 1941.